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The Night Lights of Old London.

GAS.

ALTHOUGH the primitive days of lighting London practically expired with the introduction of gas, — when, threescore and ten years ago, the first application was made to Parliament to sanction its use as a new illuminator for the thoroughfares of the metropolis,—yet it must be borne in mind that the "new light" was really known a century earlier, and only wanted science to help to make the wonderful discovery useful. How science had to combat with public opinion we shall presently tell, and it will be seen that even in the vaunted days when George III. was king, there was as much prejudice in the minds of the human race against gas as ever there is likely to be against the electric light. And is it to be wondered at? seeing that it has taken eighteen hundred years to bring into existence most of our inventive faculties, and that the vast majority of all our discoveries, and inventions have been brought into practical use within the last threescore and ten years of the Christian era!

We have already shown that the night lights of Old London consisted successively of candle wick, and oil, and that the streets continued thus illuminated down to the commencement of the present century.* There are some of our friends old enough to remember the dim oil lantern which shed its mocking light across their path as they trudged home during the eventide of those days when railways, steamboats, gas, and telegraph were unknown to the people of London. And although many friends will call to mind the commencement of gas-lighting, there are many incidents connected with the new illuminator's early days which will be new even to the best informed in such matters.

The discovery of gas, like many other discoveries, arose by mere accident, and not by a series of experiments. Miners had known of the inflammability arising from coal gases long before the days of the Royal Society, but it had never occurred to them to utilise it. Such a feat was not attempted until the dawn of the present century. The earliest account of the discovery is to be found in the "Philosophical Transactions" for the year 1667, and is quaintly headed "A description of a Well and Earth in Lancashire taking fire by a Candle approached to it. Imparted by Thomas Shirley, esq., an Eye Witness." The writer tells us he was returning to his house at Wigan in February, 1659, when he was informed that the water in a spring in Mr. Hawkley's grounds, about a mile from the town, on the Warrington and Chester road, was burning like oil. Whereupon he and half a dozen friends proceeded to the spot, and applying a burning candle, the water gave forth a flame at a particular spot, but not in the ditch which ran from the spring. Neither did the water burn when taken up in a dishful, although "the water at the burning place did boyle and heave like water in a pot upon the fire, though my hand put into it perceived it not so much as warm." This led Mr. Shirley to look minutely into circumstances. "The boyling I conceived to proceed from the irruption of some bituminous or sulphureous fumes, considering this place was not above thirty or forty yards distant from the mouth of a *coal-pit* there. And indeed Wigan, Ashton, and the whole country for many miles compass is underlaid with coal. Then applying my hand to the surface of the burning place of the water, I found a strong breath, as it were a wind to bear against my hand." Whereupon, says he, "I caused a dam to be made, and thereby hindering the removal of fresh water to the burning place, I caused that which was already there to be drained away; and then applying the burning candle to the surface of the dry earth at the same point where the water burned before, *the fumes took fire and burnt very bright and vigorous.*"

Although this discovery was deemed of sufficient importance to occupy a place in the Royal Society Transactions, nothing further was printed until 1733,—that is, sixty-six years afterwards, —when Sir James Lowther, having occasion to sink a pit for draining one of his principal collieries, near Whitehaven, we are told that "a vast quantity of damp corrupted air, which bubbled through a quantity of water spread over a part of the pit, and made a great hissing noise, at which the workmen being somewhat surprised held a candle towards it, and it immediately took fire upon the surface of the water and burned very fiercely." Of course, the workmen were considerably alarmed, clearing themselves at once from the pit, "having first extinguished the flame by beating it with their hats." After further details, the writer states that this damp air being put into a bladder and tied close was carried away, and after some days was "pressed gently through a small pipe into the flame of a candle, took fire, and burned at the end of the pipe as long as the bladder was gently pressed to feed the flame, and when taken from the candle, after so lighted, continued burning till there was no more air left in the bladder to supply the flame."

Here, then, we see the principle of the present gas light explained in a few words,—and this was nearly a century and a half ago. But before 1691, the Rev. Dr. Clayton, the Dean of Kildare, had written to the Hon. Robert Boyle a letter, in which he calls gas "the spirit of coal." The manuscript is preserved in the Sloane collection, but was printed in the Philosophical Transactions in 1739. Dr. Clayton enters fully into the method of compressing the inflammable air into bladders from a reservoir, and then pricking a hole in the bladder with a pin, and putting a lighted candle to the opening, which "at once took fire, and continued burning until all the spirit was compressed out of the bladder." And yet it was only occasionally that men of science woke up to test the peculiarities of "the bubbling flame" and "spirit of coal." In fact, it was not until 1792, a century and a quarter after the publication of Shirley's discovery, that the importance of gas was demonstrated, as a means of lighting, by none other than William Murdoch, at the out-of-the-way end of England,—Redruth, in Cornwall. After numerous experiments, he lighted up his residence and office, not forgetting a portable bladder, by which he lighted himself and his carriage as he passed along the Cornish roads. Long after he left the district, amusing tales were told of the Redruth magician and his wonderful light, and the consternation of the natives may be easily imagined, but cannot be described. Removing to Birmingham, Murdoch tells us he constructed, at Messrs. Boulton & Watts's factory, at Soho, "an apparatus upon a larger scale, which, during many successive nights, was applied to the lighting of their principal buildings," by which, he adds, "I may, without presuming too much, claim both the first idea of applying and the first actual application of the gas to economical purposes." This was in 1798, at or before which date he had proposed to Mr. Watt to get a patent, but the actual wisdom of which proposal Mr. Watt did not agree with. Any way, the experiments at Soho cost the firm more than 4,000*l.*, and in March, 1802, at the celebration of the Peace of Amiens, the Soho factory made a general illumination by means of a rod, 40 ft. long, and a burner at each end, which was, in fact, the first public exhibition of gas. Mr. Clegg tells us "The operation was simply effected by fixing a retort in the fireplace of the house below, and then conducting the gas issuing from thence into a copper vase. This was the only gas used on that occasion, the rest of the manufactory being illuminated by the usual small glass oil-lamps, and not with the gas, as has been erroneously stated." As the elder Clegg assisted at this exhibition we suppose he is entitled to speak to the facts.

A year later further improvements took place at the factory; but it was not till 1805 that anything was done to make gas applicable for in-door purposes. In the same year that Dr. Henry was lecturing upon chemistry and expounding the use of the newly-discovered light, the cotton-mills of Messrs. Phillips & Lee, near Manchester, were lighted up with 1,000 burners. There was, it seems, a bitter rivalry between Murdoch and his pupil Clegg; for the former was experimenting at Phillips & Lee's factory, while the latter was at that of Mr. Lodge. It appears to have been a neck-to-neck race

* See p. 305, *ante*.

and at last, writes Mr. Clegg, "the cotton-mill of Mr. Henry Lodge, at Sowerby Bridge, near Halifax, was lighted with gas a few nights before that of Messrs. Phillips & Lee," the men working overtime, in order to bring about the first lighting up. With this evidence of the practical utility of the new light it is not to be wondered at that London refused to remain much longer in the dark.

It would appear that, by a letter dated Paris, November 8, 1801, addressed to the Soho Factory, a Frenchman, M. Le Bon, "had lighted up his house and gardens with the gas obtained from wood and coal, and had it in contemplation to light up the city of Paris." From him one Frederick Albert Winsor, a German, is said to have derived important ideas, and which to a great extent he carried out in the vacant premises of Mr. M'Kenzie, in Green-street, Grosvenor-square, although, it must be said, Winsor appears to have been deficient in practical mechanical knowledge. However, through many difficulties, he at last succeeded in bringing about very important changes, resulting in his obtaining a patent dated the 18th of May, 1804, in which, describing him as "of Cheapside, London, merchant," he is allowed to exercise and use his invention called "An improved oven, stove, or apparatus for the purpose of extracting inflammable air, oil, pitch, tar, and acids from and reducing into coke and charcoal all kinds of fuel, which is also applicable to various other useful purposes," and by means of which "the inflammable gas or air, being purified from that carbon so pernicious to respiration and dwellings, may be led and conducted in a cold state through tubes of silk, paper, earth, wood, or metal to any distance in houses, rooms, gardens, places, parks, and streets, to produce light and heat." This patent he supplemented by others in 1807, 1809, and 1843, the latter being for special kinds of burners, and describes himself as of Lincoln's-inn-fields, barrister-at-law.

The patent dated Westminster, 7th February, 1809, is of a somewhat remarkable character, for while it fully describes the nature of the invention, there is quite a little history given of the progress made in gas-lighting to that date. Mr. Winsor is described as of Pall-mall, Middlesex, esquire, and the patent is for 'certain improvements upon my former patent oven, stove, or apparatus for carbonising all sorts of raw fuel and combustibles, and reducing them into superior fuel of coke and charcoal, as well as for extracting and saving during the same process the oil-tar, pyroligneous vegetable acid and ammoniacal coal liquors, and for extracting and refining all the inflammable air or gas, so as to deprive it of all disagreeable odour during combustion, and rendering the gas itself salutary for human respiration when properly diluted with atmospheric air and various methods of applying the above several products to useful purposes." His specification tells us:—"The gas-light apparatus consists of two principal parts, the one to carbonise coals, &c., and extract the smoke by heat, and the other part serves to cool, decompose, and refine the smoke. Both vessels must be made air-tight to obtain a perfect analysis of coal or other fuel and combustibles." And he remarks that philosophers have hitherto tried but failed to analyse fuel on a large scale because of the expense and difficulty. "Since my first patent in 1804," continues he, "and my publicly recommending the introduction of coke and gas lights by numerous advertisements, enlarged iron retorts and huge gasometers have been and are now made use of in some manufacturing towns" and, adds he, his present invention is so entirely different to everything yet attempted, that in proof thereof he gives an interesting series of references to all the printed accounts of previous gas-light exhibitions. After detailing his invention in full, he continues, "The gas may be used in ornamental, movable, and flexible branches, issuing from the condensing pedestals, such as has been shown in a great variety at the Lyceum in 1804, in Green-street in 1805, and in Pall-mall since 1806, to the present time. In Green-street, by means of two small stoves placed on each side of the kitchen fire made with coke and one separate condenser, the gas was conducted into the parlour and second-floor above it."

This exhibition at the Lyceum Theatre, Strand,* naturally caused a large amount of excitement, for Winsor not only lectured on the merits of gas, but gave practical evidence of its usefulness, notwithstanding many unfortunate circumstances, such as being connected with assistants not always ready to help him, and the impure nature of the gas itself, the smell of which caused a dislike among the audience, however much they appreciated the light. Even at that time the actual saving in the cost of the old and new system was detailed, for while the old oil-lamp lighting at Phillips & Lee's factory cost 2,000*l.* a year, the new gas light,—and a better light too,—had only cost 600*l.*! Then, again, to show how opinions differed, while the most enlightened chemist of his day, Humphrey Davy, declared that the adoption of gas in the metropolis would cause a terrible explosion, the insurance companies, on the other hand, considered Phillips & Lee's factory so much safer by its use than when candles were employed that they did not object to the system.

It was in 1805 that Winsor started by circular his project for "The National Light and Heat Company," which offered "a mine of wealth in Britain, and would add to the despair of our foes their devices for our ruin." "Two houses are now fitting up as a standard for a general introduction of gaslights now clarified to their utmost brilliance. The 5*l.* deposit will suffice for realising the plan in London and its environs, and all further sums wanting will prove but a *small deduction* from *speedy profits*. The *official experiments* as the basis of my *greatly undervalued estimates* will be repeated to any number of subscribers." He supplemented this circular by several others in 1806 and 1807, in one of which he maintains that his company is of more solid a character than any other, for "it exceeds in benefits the water companies by gaining four valuable products from the destruction of a great nuisance,—that of smoke." He says that three years before, 10,000*l.* were subscribed by one hundred subscribers to form a coke company, "because many of those gentlemen were fully persuaded that my coke being introduced would alone make their fortunes." And, although the nominal sum of 50,000*l.*, in 5*l.* shares, was mentioned for the company's capital, and hints thrown out that over 500*l.* a year could be easily earned by each shareholder, it took much patience and perseverance to make the world believe that the scheme was not a bubble.

However, it was in the year 1807 that London street folk were made to realise the actual progress in gas-lighting, and whatever may have been Winsor's defects in a practical chemical knowledge, he certainly was not defective in perseverance. In that year was exhibited the *first* London street-lighting, and that was in Pall-mall. The new company, which had its offices at Nos. 97 and 98 in that thoroughfare, lighted up one side of the street on the 28th of January, and on the king's birthday, June 4th, both sides. In the evidence given before a Parlimentary committee, it was stated that the length of gas-pipe in Pall-mall was 1,700 ft. in the south side; that the new gaslight was equal to eighteen of the old lamps; that two chaldrons of coal would keep 800 of Winsor's burners a-light for eleven hours; and that adapting a house in the street for a stove would cost 500*l.* The first outdoor experiment had been by conveying a pipe to the top of the house from which issued a single flame, but the novelty of which naturally drew vast crowds. Winsor then proposed to light the whole parish of St. James's, Westminster, for 26,546*l.* This would include 65,500 ft. of iron piping, six stoves in various parts of the parish, with two men and a boy at each. There were 2,200 street-lamps in the parish, each costing 25s. per annum. They would be placed 70 ft. apart, the old lamps being from 30 ft. to 40 ft. But with all the dazzling advantages held forth, and six months' elaborate experiments, the public declined to be so sangnine of the success, and as a result, after a loss of something like 10,000*l.*, the National Light and Heat Company came to an untimely end.

From Pall Mall the spirit of illumination extended itself to a less aristocratic thoroughfare, Golden-lane, where, on the 16th of August, 1807, the brewery, and part of Whitecross and Beech streets was lighted up. But although every means was tried to get a favourable reception for the gas, everything failed until 1809, when the Chartered Gaslight and Coke Company, with a capital of 200,000*l.*, applied to Parliament for an Act of Incorporation "for procuring coke, oil, tar, pitch, ammonial liquor, essential oil, and inflammable air from coal, and for other purposes." Of course great opposition met the application from Murdoch, Watt, and others, and a failure of the first attempt was the consequence. But in the following year the company applied again, when special conditions being incorporated, which stipulated that the streets of London, Westminster, and Southwark, should be lighted cheaper by gas than with oil, the Bill was passed, and a charter directed to be granted within three years. The company, however, found out that they had made miscalculations, for laying down pipes in Westminster alone was found to entail an expense of 150,000*l.*, while experiments and purchasing a wharf at Cannon-row would cost at least 40,000*l.* more. Yet, nothing daunted, they persevered, and immediately after they obtained the twenty-one years' charter, which is dated the 30th April, 1812, the company purchased sites at Peter-street, Westminster, Brick-lane, Spitalfields, and Curtain-road, Shoreditch, and set about making gas in earnest.

It would be impossible for us to detail all the extrordinary events in connexion with the introduction of gas into the streets of London, but we think a few facts long since forgotten may, at this point of our narrative, be introduced. We think it will interest many of our readers to read one of the advertisements issued by the company immediately after their first failure to get a charter in 1809. "*Ten Thousand Pounds.*—Wanted, Two or Three Partners, in a most capital and important concern, being the sole establishment of the kind in Europe, that will bring in from 10,000*l.* to 20,000*l.* per annum, and more than double that sum in a few years. This will be secured by an exclusive patent during fourteen years, and is expected afterwards to be farther secured by Act of Parliament. Each Partner must advance 5,000*l.* The concern is so highly respectable that the first nobleman may most honourably hold a share in the face of the world, it being a public and private benefit to the human race, as well as of very general national advantage. Every communication will be fairly and candidly given to Principals alone, who may apply by letters (post-paid) to S. SMITTMAN, Esqre., and left at 187, High Holborn." Even at the present day few persons are aware that this interesting advertisement related to the first London Gas Company. That there were some Londoners ready to take advantage of the new light, and make it the means of advertising themselves, is proved by several shopkeepers introducing the gas into their shops and using brackets of an attractive form. The company having laid their pipes from Curtain-road to the City, celebrated the event by a dinner at the New London Tavern, and gaily decorated the place for the occasion. Then, again, a Mr. Gregory, of Norton Folgate, lighted his shop and house by means of curious and fanciful devices, among which were a figure in the act of smoking, holding in his hand a lizard with lighted gas issuing from its mouth; a glass Chinese vase, with starlights; a glass chandelier, and two images on the mantelpiece of his sitting-room, which naturally caused in 1813 as much excitement as did the exhibition of the new electric light at Messrs. Wells's Shoreditch establishment in 1878. Another individual to take up gas-lighting in its earliest days was Mr. Ackermann, at No. 101, Strand, who in 1812, with Mr. Clegg's assistance, used it in his library, warehouse, printing-office, and dwelling, by which he saved at least 120*l.* a year. It was during its first exhibition here that a lady of title called upon him and offered a large sum for the lamp, desiring to take it home in her carriage, not thinking what the process of producing the flame actually was. And Messrs. Lloyd, thimble-makers, of Queen-street, Southwark, used the gas for soldering purposes about the same time. It may be here stated that the success of Mr. Clegg's plan of lighting up Ackermann's premises caused him to be engaged by the Chartered Company as engineer at their works. "At this time," writes he, "the company was nearly on the point of dissolution. . . . . lighting a town with gas was still thought a visionary scheme. Sir Humphrey Davy considered the idea so ridiculous that he asked if it were intended to take the dome of St. Paul's for a gasometer? To which Mr. Clegg replied that he hoped to see the day when gasometers would not be much less. They are now (1841) made 100 ft. diameter and 39 ft. deep!" What would our famous Davy have said had he lived to our time to see the gasometer of the Imperial Company in the parish of St. Pancras, which is 618 ft. in girth?

Like all new things, as it is a privilege to have them condemned before being actually

* History seems to repeat itself: the electric light, in its new form, was first popularly shown at the Gaiety Theatre.

tried, so it was with gas. The company tried hard to overcome prejudices, fitting up houses and shops free of expense, and instructing Mr. Clegg to make a particular burner to overcome certain scruples of the insurance offices. When the pipes were being laid down in the passages of the House of Commons, the architect suggested that there should be at least 5 in. space between them and the walls, under the belief that the pipes got red hot! while, because manufacturers did not seem inclined to make welded pipes, old musket-barrels attached to each other were used! Added to which the company's shares, which had cost 10*l.*, would not sell for 2*l.*, and a series of unfortunate mishaps at the works did not improve matters by a long way. All these things and many more made the progress of gas-lighting in London, during the first few years, a very slow one indeed.

But in the City itself at the date of which we write, while things were beginning to assume a position equally progressive, there were several incidents in the manufacture of gas perhaps of greater interest. Among the ingenious inhabitants of Fleet-street was a William Knight, who, at the suggestion of Mr. Frederick Sparrow, of Ludgate-hill, erected an apparatus for the purpose of making the new light. It may be readily imagined that the process was not an agreeble one to the neighbourhood, and consequently in May, 1813, he was indicted for the nuisance. Those now living may not be aware that these experiments were carried on at the rear of 183, Fleet-street, Fetter-lane, and the present generation will no doubt smile when they read the presentments of the St. Dunstan's inquest of the 21st December, 1813, which Mr. T. C. Noble has extracted from the original minutes, and obligingly communicated to us, and which is now printed for the first time:—

"They do upon their oath present William Sturt, of No. 183, Fleet-street, in the said parish of St. Dunstan-in-the-West, in the said Ward of Farringdon Without, in the said City, for continuing by the space of three months now last past, and until the day of the date of this presentment, the making of gaslight, and making and causing to be made divers large fires of coal and other things for the purpose aforesaid in and upon the premises situate as aforesaid, and with the said fires, and also with divers materials, liquids, and preparations, making and causing to be made, sending forth and emitting thereout divers great quantities of noisome, offensive, and stinking smoke, smells, and vapours, by means whereof the air there during all the time aforesaid was, and yet is, filled and impregnated with divers noisome and offensive stinks, and smells and vapours, and the dwelling-houses near the same were and are thereby rendered, and become unhealthful, unwholesome, and uncomfortable to his Majesty's subjects residing therein, and passing and repassing in and near the same. And is a public nuisance in the said parish of St. Dunstan-in-the-West. For which said nuisance so continued by the said William Sturt as aforesaid, one William Knight, the preceding occupier of the said premises, was indicted at the Session of the Peace holden in and for the said City in May last, and which said indictment stands adjourned."

Knight and Sparrow had already taken steps to carry out the gas-lighting in the City, and the site they pitched upon for their works was already classic ground, — Whitefriars. Mr. Noble, in his "Memorials of Temple Bar, with some Account of Fleet-street," describes fully the historical character of the district. Here stood the monastery of the Carmelite Monks, or the White Friars, founded so long ago as A.D. 1241, and here was the "Alsatia" rendered famous by Sir Walter Scott. Here in the good old times the nobility and gentry did not scorn to live; and here, upon the very site of the subsequent gasworks, stood the celebrated theatres the Whitefriars, Dorset Gardens, and Salisbury-court,—the last of the playhouses disappearing in 1709. Then the ground was occupied by the New River Company for offices, who in turn sold it to Messrs. Sparrow & Co., subsequently known as "The City of London Gas Light and Coke Company," who, armed with the necessary power, commenced here their extensive works for the purpose of lighting the City.

On Christmas morning, 1814, the first public lighting in the City between Temple Bar and the west end of Cheapside, and Newgate-street to Holborn Bars, with all adjacent thoroughfares, was inaugurated, and on the 26th of the following January the gas was introduced into the houses and shops. A public print of the time tells us, "The machinery and apparatus are most completely and philosophically arranged. . . . . A purity of light, combined with a steadiness of flame, which was never before acquired. But the new works had not been in existence very long before Sparrow & Knight were indicted for a nuisance, the old indictment being still kept over their head. They pleaded that they were still making experiments at great cost, which they trusted would prevent further complaints, and the cause stood over until January, 1816, upon the understanding that in the mean time all should be satisfactorily arranged,—and the result was that nothing further was heard of it."

After an existence as a private firm for some three years, "An Act for better Lighting the Streets and Houses of the Metropolis with Gas" was passed the 23rd of May, 1817, which incorporated Frederick Sparrow, Henry Sparrow, James Lynn, Timothy Tyrrell, and sixteen others, as "The City of London Gaslight and Coke Company" for a term of forty-six years, giving them power to raise a capital of 200,000*l.*, in 100*l.* shares, within five years, and "to make inflammable air or gas, and also coke, oil, pitch, tar, asphaltum, ammoniacal liquor, and any other products to be obtained from the manufacture of such air or gas, and to sell and dispose of the same respectively in such manner as they shall think proper."

Retracing our steps a few years, we must again quote Mr. Clegg's description of the early days of the *first* gas company—the Chartered. In 1813, his father commenced the works at Peter-street, Westminster. The ground on which they were erected was a swamp nearly on a level with the Thames, and formerly overflowed by the river. It was, therefore, impossible to sink for a tank; an iron one was too expensive; hence the production of Clegg's revolving gasometer, also too expensive for general use. Government inspected the work, and Sir Joseph Banks and others recommended that no gasometer should contain more than 6,000 cubic feet of gas! And it was a great evidence of their supposed judgment when, a few months later, an explosion took place here, shattering the windows in the neighbourhood, and severely injuring Mr. Clegg.

"On the 31st of December, 1813," writes our informant, "Westminster Bridge was lighted with gas. It soon became an object of attraction, and, while the novelty lasted, was a fashionable promenade. The lamplighters were much startled by the new system, and refused to act, and Mr. Clegg had himself to light the lamps for a few nights." On the 1st of April following, the old oil-lamps were removed from St. Margaret's parish, and gas burned for the first time, this being the *first parish* to apply to the company for a contract. Hundreds followed the lamplighter with his torch, and when Mr. Grafton's hand-lantern was invented, it was thought to be another stride in the right direction. Then, later, came the man with box of matches and ladder, and now the only instrument which the lamplighter uses is the "magnetic" wizard-looking wand. Of course, the old oil-lamp contractors complained loudly against the innovation. At one meeting between them and the parish, one of the guardians told them their oil-lamps gave no light. This was, to all intents and purposes, correct; but the contractor had his reply ready. His contract stipulated they were to be kept lighted from sunset to sunrise; but the body of light required was not contracted for! Strong prejudices long continued, and among the earliest battles between the chartered company and the parishes was the right and the power of erecting the lamp-posts. When the allied sovereigns visited England in June, 1814, the gas devices at the illumination were very brilliant. The Chinese pagoda, erected by order of the Government over the canal in St. James's Park, and lighted up with 10,000 gas-jets, was a brilliant sight, and luckily a "private" lighting-up showed royalty its beauty; but, on the night of the general illumination, Sir William Congreve having, against advice, let off some fireworks near it, accidentally set fire to the wooden erection, which burnt the whole to the water's edge. It was very unfortunate for the gas company, who had not the largest number of friends, for a report soon spread that it was all through the dangerous gas. At the banquet on lord mayor's day, in the following year, the Guildhall was first lighted. "The profuse delicacies of the table, the waving of feathers and sparkling jewels of the ladies, the mild splendour of the gas, shedding a brightness clear as summer noon, but undazzling and soft as moonlight,—altogether formed a magnificent combination worthy the inauguration of the presiding citizen of the day." Those who have been eye-witnesses of the lighting up of this fine hall, with its thousands of gas-jets and its long celebrated "Copeland" star in more modern times, will fully believe the City made a step in reform over sixty years ago in substituting gas for the primitive wax candles and oil.

With respect to the general lighting up of public buildings, the poet, Thomas Moore, went with Lord and Lady Lansdowne, on May 6th, 1822, to see St. Paul's Cathedral lighted, and seven theatres were also illuminated the same year, the last to adopt gas being the Haymarket, in April, 1853, the original proprietor by his lease stipulating that only oil lamps should be used. The first church-clock lighted with gas was that of St. Giles-in-the-Fields, 23rd of April, 1827, and its inventor received the silver medal of the Society of Arts. The second church-clock illuminated was that of St. Bride's, Fleet-street; the third, Whitechapel; and the fourth, Islington. We have been told that Shoreditch Church was one of the earliest, if not the first, lighted up in the interior,—it being for a long time thought it would be a profane innovation to allow gas within sacred precincts. As we have already stated, the last outdoor place to adopt gas was Grosvenor-square, and that was just forty years ago.

In 1815, by patent, dated December 9th, Samuel Clegg, the Chartered Company's engineer, brought out his "Improved Gas Apparatus,"—the *first* gas-meter. The "dry" gas-meter was patented in 1834. At the time of Clegg's retirement from the Gas Company, in 1817, their three stations produced 300,000 cubic feet of gas, using twenty-five chaldrons of coal daily; the City Gas Works used three chaldrons, and by computation the whole produced gas for 76,500 Argand lamps, each lamp equal to six candles. In 1819, Messrs. Taylor & Martineau erected an apparatus at Apothecaries' Hall for making oil gas, and in May, 1821, the Whitechapel and Bow Works adopted the invention, as did also Covent Garden Theatre, Whitbread's brewery, and the Argyll-rooms.

Early in 1822 a Royal Commission was issued to inquire into the subject of gas-lighting, and it may be interesting to our readers to have a summary of the facts produced in evidence. There were three companies supplying London. The Chartered, who had fifteen gasometers at Peter-street, twelve at Brick-lane, and six at Curtain-road; total, thirty-three. The City had eight at Whitefriars. The South London (afterwards the Phœnix) had six at Bankside. The total number of the gasometers was, therefore, forty-seven; total contents, 917,940 cubic feet of gas; to make which, 33,158 chaldrons of coal were carbonised, producing 41,447 chaldrons of coke. There were 22,819 bushels of lime used annually in purifying, and the mains (or pipes) covered 210 miles of ground! The Chartered Company supplied 8,749 public lights and 21,886 private ones; the City, 2,413 and 5,423; the Bankside, 1,000 and 3,038. The Chartered supplied 8,586 houses and 172 public buildings, including seven theatres. The extent of ground covered by the three companies ranged from Brompton to Islington, Kingsland-road, Whitechapel, Dockhead, Camberwell-gate, and Marshgate, Lambeth. The South London Company which commenced operations in 1816 in a retort-house at Bankside, subsequently (says Mr. Z. Colburn) occupied by Messrs. Rennie as a boiler shop, was incorporated as the Phœnix in 1824, and afterwards extending their works to Greenwich and Vauxhall. The Imperial was the next company, established in June, 1821, who erected works at St. Pancras, Hackney-road, and Fulham. Then followed in due order of time the Ratcliff, 1823; the Independent, at Haggerstone, 1825; the Equitable, at Pimlico, 1830; the South Metropolitan, in the Kent-road, 1834; the Commercial, at Stepney, 1840; the Surrey Consumers, at Rotherhithe; the Western, at Kensal Green, 1849; and the Great Central, at Bow Common, in 1850-1,—in all thirteen companies owning nineteen works, all of which, except two, were, a dozen years ago, within four miles of Charing-cross. It was estimated in 1861 that they carbonised 882,770 tons of coal annually, making over eight thousand millions cubic feet of gas, which was sold (except one eighth lost by leakage) for 1,411,788*l.* The total capital employed amounted to 5,602,900*l.*; the profit from which, exclusive of interest paid, was stated to be 410,697*l.* At the end of 1874 the gas rental was 2,606,818*l.*, and the thirteen companies supplied gas to 54,109 lamps, running over 2,500 miles of streets, each light equalling a dozen candles. Half a century previously there were 12,000 public lights which cost 15*s.* per 1,000 feet of gas, or nearly four times as much. And another half a century earlier London was compelled to be satisfied with 4,000 lamps,—or something like fifteen times less number than those employed in lighting the London Metropolitan streets in this present year of 1879.

In the year 1827 a great commotion occurred in the City of London, through the report that the Corporation were about giving their contract for lighting to a new company. The Independent and British Companies offered to supply gas 25 to 30 per cent. less than the other company, and give a purer gas. The same principle appears to have actuated the Chartered in 1833, in St. James's, Westminster, who, when opposed by the Equitable, dropped their price 25 per cent. In 1847 the General Gas Act was passed, and in December, 1849, the Great Central Company prayed the Court of Sewers to be allowed to supply the City, which being allowed by deed signed on February 12th, an Act was passed on July 3rd, 1851, upon this condition, that the Company was only to supply the City (the district about their works at Bow being lighted by the Commercial), and never charge more than 4s. per 1,000 ft. There was a wild excitement in the City during the time the new company was battling for the favour, and squibs were flying about in all directions. One of these is before us, and its title reads as promising as its text,—"City of London Gas Bubble! The Reign of Cant and Humbug exemplified in the Career of Jeremy Diddler, late M.P. for Kennington, the Gas Philanthropist, with the Life of Hangus Scum, of Scotia, &c. By the Greatest Writer of the Age."

We have now brought our subject down to modern times. The latter history of gas is well known to our readers, and gas legislation is no new thing in the acts and deeds of our Parliament houses. But, perhaps, of all the doings in connexion with the companies, the great amalgamation by the Chartered Company in 1869 with other companies was the most wonderful. The late Chartered, now known as the Gaslight and Coke Company's works, at Barking Creek, must be considerably the largest in the world. The first pile for them was driven on the 19th of November, in that year, by Mr. S. Adams Beck, the governor, from whom the new home of the London gas manufacture has been named Beckton. We have been told that 250,000 cubic yards of earth were excavated; about 90,000 cubic yards of concrete were filled in, and 40,000 cubic yards of clay puddle. There were 25,000,000 of bricks used, 50,000 cubic feet of stone, 60,000 cubic feet of timber, and 40,000 tons of iron,—the total cost being about three-quarters of a million of money. The total ground area is 150 acres, with 1,500 ft. of river frontage. There are 1,080 retorts, consuming 1,000 tons of coal per day, producing 10,000,000 cubic feet of gas. The pipes, 4 ft. in diameter, are carried from Barking to Westminster underground, a distance of 11¼ miles; and in order to reach the works, which are in the marshes, a road was constructed, 60 ft. wide and about three miles long, to connect the old town with the new. Thus in a few words we have shown that while the company was the first, so it is now the greatest. The old gasworks at Curtain-road, St. Luke's, and Whitefriars have disappeared,—the Corporation of London purchased the latter site for 170,000*l.*,—and their disappearance has not been a grief to the neighbourhood. We should not object to all the other companies' works being removed into the marshes. And yet, seventy years ago, who would have dreamt that the much-abused gas would have obtained uch a hold of the people of London in the latter half of the nineteenth century as it has done? Dr. Johnson was a prophet when he said,—"One of these days the streets of London will be lighted by smoke." What will they be lighted with a hundred,—nay, a score,—of years hence?

THE NORMAL COST OF SCHOOL BUILDINGS CONSIDERED AS AN ARCHITECTURAL INQUIRY.

A CORRESPONDENT writes to us to ask how far the constitution of the Royal Institute of British Architects would enable that body to exercise an influence on such questions as that now so unsatisfactorily pending between the London School Board and the Local Government Board,—questions that are so seriously connected with the welfare of the building trade. Of course, it is not for a moment intimated that that body, any more than any other architectural referee, can have any opinion to offer as to points on the legal status of which the Attorney and Solicitor General have advised in opposition to one another. All that can be said as to that is, that the greater part of our recent legislation appears to be as vague and contradictory as are the respective rights of the Civil and Ecclesiastical Courts. But under the questions of law, of form, or of procedure, lies a very important architectural question. The body which has been created in order to provide for the education of London has incurred large expenses, and is prepared,—or it may be more correct to say, is desirous,—to incur more, on a basis of cost per scholar which the Local Government Board considers to be wasteful and extravagant. The question is not one of light moment, or one which, supposing it to be settled up to the present year, will not recur. It is one which must be expected to make its appearance, if not annually, at least every four or five years, as long as London maintains its present rate of increase.

The total population of the district of the London School Board, at Midsummer, 1878, was estimated at 3,577,304. The estimated number of children contained in the total, if the ratio in London be the same as the average ratio for England and Wales, was 734,900, between five and fourteen years of age, and 183,600 between three and five years of age; in all, 918,500. Out of this estimated total, 287,616 children attended Board Schools in 1878, of whom 178,173 were under, and 109,543 were over, ten years of age. Taking together all elementary schools, public and private, other than those of the Board, the total very closely approached that of the Board Schools, — being 287,112, — thus yielding a gross aggregate of 574,728 children educated out of a presumed number of 918,500. But in the difference are, no doubt, to be included all the more tenderly-cared-for children of the more comfortable classes, between the ages of three and eight or ten years of age. Nor does it at all appear, from the statistics collected by the Board, how many children under the age of fourteen are educated in schools that are not described as "elementary." The present school accommodation is said to be adequate for 472,921 children. The Board estimate the actual deficiency of accommodation at this moment at 123,296 places, towards the providing of which they desire to provide at once 37,604 places.

These figures, if somewhat vague, are large enough to show the great architectural importance of the question of school provision. If we take the number of children actually educated in the Board schools (which is, perhaps, the only thoroughly reliable figure out of the whole series) as the basis of our calculation, and consider the population of London as continuing its recent rate of increase, and doubling in forty years, provision will have to be made annually for room for 7,000 additional children. It is thus clear that the question of the outside cost per place that should be allowed for building new schools is one of very considerable importance. In addition to all that has been done, and is doing, we must look forward to the steady annual outlay of something like 70,000*l.* in new schools, merely to prevent the children of the classes which now frequent the Board schools from suffering from want of accommodation. And this is entirely independent of the question whether 1,230,000*l.* or more is not at this moment required to make up the accommodation now actually needed. If this be so, as the School Board intimates, the 70,000*l.* per annum of future building outlay will be raised to above 100,000*l.* per annum.

This being the case, it is clear that the question of allowable cost per head is one of very great public importance. It is, in the first instance, an architectural question; from a second, but no less important, point of view, it is a ratepayer's question. Accusations of extravagance, we regret to observe, are somewhat freely bandied about. It would be more to the point if the disputants would provide such figures as would enable public writers or professional authorities to speak distinctly on the subject. The Education Department state, in the letter of Mr. Patrick Cumin, of March 25th, that the estimates submitted to them by the School Board for the buildings (which appear to have been put in hand contrary to the warning given by themselves) were not approved. We cite this, not as bearing on the questions which lie outside our line of inquiry, but as a proof that the superior authority regards the School Board as too costly in its plans. On the other hand, the Board of Works for the Westminster District have held a special meeting "for the purpose of considering the extravagant administration of the London School Board," and have carried a resolution implying the adoption of that charge. The very same number of the journal that reports the above facts contains also the admission of the Finance Committee of the School Board that hitherto cheques for the purchase of land have not been paid to the vendors or their agents, but made out to the order of the solicitors of the Board. This is, to say the least of it, a very loose way of doing business. A few lines further down comes a debate as to the cost incurred by the Industrial Schools Committee in fitting, out the *Shaftesbury* training vessel, and a resolution complaining that heavy liabilities had been incurred by the committee without the previous sanction of the Board.

Now all this is very unfitted to command public confidence. If we may be allowed an opinion, the vice lies not so much in any want of zeal or of good intentions on the part of the School Board, or of any of the conflicting authorities, as in the attempt to settle professional questions by amateur judges. We know that there is a very strong feeling, on the part of individual architects, as well as of engineers, against anything that may tend in any way to limit their free personal responsibility, or to interfere between them and their clients,—even when the public is a client. But we put it to those interested whether the dignity and influence of every architect, as a member of the profession, would not be enhanced, rather than diminished, by his giving a hearty assent to that kind of corporate action which, if taken in time, would have been enough entirely to prevent such costly disputes as those to which we have referred?

On the occasion of the introduction of a new feature into our public institutions, involving a large amount of building of a monumental character, how much contest would have been avoided by the prescription, in the first instance, of normal professional regulations. Thus, in the case of schools, the elements of cubic space to be allotted per scholar, and of the cost per scholar at which, on certain conditions of good but not ornate building, that space could be provided, ought in the first instance to be determined. As to this, the cost of land, of course, is an element out of the power of the architect to control. But, on the other hand, that cost ought to a certain extent to control the distribution of the building. When the area is extremely costly, as in central parts of the metropolis, a greater expenditure on foundations, and in the thickness of the walls, may prove a true economy, as enabling the architect to gain in vertical measurement some of the room for which he has to pay so highly per yard of area. Thus regarded, the keeping down the cost of the building being a *sine quâ non*, a true economic balance between the height and the area of a school might be struck. We are not now offering an opinion as to the proper price to be allowed per sitting. That is precisely the point on which we think that full professional discussion is desirable. What we are anxious, as far as possible, to see carried out is, that such discussion should be conducted to a definitive issue, and that such issue, stamped with the authority of the general assent of the profession, should be held to be decisive as to such an issue as that now in dispute between the School Board and the Local Government Board, as to the propriety of the estimates adopted, or at least recommended, by the former.

We have taken, in our preceding calculations, the price of 10*l.* per sitting as the normal cost of an elementary school, not from any wish to prejudge the case, but as affording an approximate mode of stating it. We think that we are correct in saying, however, that this is the limit which the Local Government Board think should not be exceeded. That may, or may not (without further information) be a fair limit. It is one as to which the Local Government Board can only form a second-hand opinion; that is to say, that they must adopt that limit in the opinion of their own adviser or advisers. On the contrary, the School Board may have an equal confidence in their own advisers, and may be of opinion, in the same second-hand manner, that 12*l.* or 15*l.* per scholar is a proper allowance. What we see then is, two unprofessional, and, as far as the point of issue is concerned, amateur, bodies, who are really fighting, at the public cost, the battle of two advisers, or two sets of advisers, who are not brought to the foreground. This, we think, is as unfortunate for those advisers as it is for the boards, and also for the public. In providing half a million of

sittings, a difference in normal allowance of a pound per sitting means half a million of public money more or less wasted. This is not a matter to decide in the dark. It is one on which most architects of a certain experience would have something to say. Possibly they might not all say the same thing. If so, that only shows that the case is one of those rare instances in which it is true that in the multitude of counsellors there is safety. It is impossible that an open discussion, among experts, of such a point as the proper cost of a school to be built with public money for elementary scholars of the humbler classes in London, should fail to arrive at a very definite result. The least that it could do would be to establish certain classes of building, as to architectural finish and ornament, for which a certain price per cubic foot should be paid.

We by no means assert that such should be the same in all parts of London. While we believe that a frugal simplicity is called for in such buildings, it is quite possible that a certain relation to the architectural character of the district may be desirable, and may raise the cost in more costly neighbourhoods. That, however, is one of the points as to which consultation is required. It would be a very happy thing for our metropolitan architecture if a hitch, which is very discreditable somewhere, and to some persons, whoever they may prove to be, should lead to a greater unity among professional men; a greater deference paid by each member of the learned profession to the profession of which he is a member; and, above all, an utter reprobation of the dangerous fallacy that it is a matter of taste, or a point of insoluble difficulty to decide, whether free schools should be built at 10*l.* or at 15*l.* per head, or whether the largest sum that can be squeezed out of the public pocket should be made to provide for the accommodation of 400,000, 500,000, or 750,000 children. Something like the latter question appears, as far as facts are accessible, to be the point now at issue.

It must be obvious with how much more authority the professional adviser of such a body as the School Board would be clothed if he were able to refer to accepted professional rules, than in any other case. "It is the opinion of our profession," he would be able to say, "officially put on record, that for the purposes of elementary schools a simple design, somewhat resembling that erected at such a place, is usually adequate, and that buildings on that scale and principle may be erected at so much per seat. On the other hand, when circumstances call for something of a more ornamental nature, let me call your attention to the class of buildings represented by so and so. The cost of that style is about so much per seat. If you decide on the degree of ornamentation, as fitted to the locality, for the buildings now under consideration, I will prepare the designs in accordance with your decision." The position of the architect, in such a case, would be unassailable. The decision of the Board would be confined to a definite issue, as to which each member might be called upon to give a reason for his vote. The question whether the accommodation of the children of the poor should be palatial or otherwise would not be settled by a sidewind, or by the fact that Mr. A. was an advocate for Palladian and Mr. B. for Cinquecento architecture. If a Board wished to pay for a perspective they would have to do so with their eyes open. We apprehend that a manifest economy, and that not at all involving what is squalid or unseemly, would be the result of this method of putting the right saddle on the right horse.

It may be added that, as far as any Board of unprofessional men is concerned, the only safeguard that they can have as to keeping within a definite cost is first to prescribe the expenditure, and then to entrust to competent architects the design and execution of buildings on that definite basis. To receive plans and estimates is all very well; but it is a proceeding which, as the experience of all public works proves, is anything but certain as a mode of regulating expenditure. Even if actual contracts be entered into, the question of extras must always be an open one, and one as to the settlement of which, without injustice either to the work itself or to the builder, a body of employers can only be sure that they are not likely to incur unexpected expense, by adopting, in the first instance, such rules as we have above indicated. In a word, when buildings of great cost and magnitude are to be erected, at the public expense, it is by fitting the design to the money to be laid out, and not by selecting a picturesque or otherwise meritorious design, and endeavouring to execute it at a given estimate, that the true objects of utility and economy can alone be with certitude attained.

OUR ANCIENT MONUMENTAL CHAPELS.

The case now pending as to the ownership of the Fitzalan Chapel, attached to, or forming part of, the parish church of Arundel, is one of no slight moment as regards the protection of many of our most interesting ecclesiastical monuments. As to the individual case, pending its decision, we must of course say nothing that might be thought likely to intimate, or to affect, the course on which legal acumen will finally decide. But though differences of a religious nature have in this case precipitated a conflict, it will be well that the state of the law should be made clear with reference to all similar claims. Some of the most interesting architectural relics in England are either tombs in churches, or mortuary chapels, in or attached to churches of different grades, whether parochial, collegiate, or cathedral. We may instance the beautiful chapel of the Countess of Richmond, to the north of the chancel of Christchurch abbey church, but under the roof of the chancel, as to which there has been some recent question. Another very interesting chapel is that of the Bedford family, attached to, and opening into, the parish church of Chenies, Bucks, but quite independent as a building. This chapel is rich in monuments, reaching back to the time of Queen Elizabeth, and indeed, as regards some effigies, to the Crusades. The care of the excellent rector, Lord Wriothesley Russell, which has repaired and beautified the church, has only continued the family tradition of the reverent custody of the chapel. But no question could arise in this case as to the use of this consecrated building for parochial purposes. A like remark may be made as to the mortuary chapel of the More family (now fallen to the spindle, and represented by the More-Molineux family), at Guildford. In the building of the new church of St. Nicholas, to which this chapel is attached, a pierced screen, with the openings fitted with plate glass, allows the interior of the More Chapel to form a part of the visible interior of the church, without in any way opening the private freehold of the More-Molineuxes for parochial usage. A singular effect has at times been produced by this introduction of a novel material in ecclesiastical architecture, plate glass. In certain states of the atmosphere, probably when dew forms on the back of the thick plates in the more chilly atmosphere of the chapel, the lights of the chancel, and the surplices of the choir, are reflected on the chapel screen; and a ghostly service in the More mausoleum appears to accompany the vespers of the church. As the choir leaves the chancel, the whole chapel becomes alive with a multitude of departing forms.

Again, we may cite the Darrel Chapel attached to Ramsbury Church, but not under the roof of the nave, as to which we are happy to have been told that some remarks in our columns some years ago have led to the removal of at least the most prominent marks of neglect and disrespect to which we formerly alluded.

In all these cases there has been, in the first instance, the same motive, although that motive has been carried out in two somewhat different modes. The motive was to secure the repose of the remains of the founders or benefactors of churches or chantries beneath the consecrated roof, with a view, in most cases, to the performance of religious services for the souls of the departed. Whether we take an external chapel, as the Darrel Chapel, or an internal one, of which we have well-known examples at Westminster, the building was a chantry, with its own altar, piscina, and often priest, attached. The rules of the Church of Rome are not adverse to the erection of different altars under the same common roof, or to the contemporaneous performance of mass at the several altars.

With the change in the rite introduced at the Reformation, the separate services of all these mortuary chapels came to a close. The intentions of the founders of those which were built in, or as prolongations or extensions of, cathedral or parochial churches were, however, so far respected that such chapels have since that time been maintained as parts of the edifice of the church. Certain family rights may have still been reserved, as in the case of those of the Dukes of Northumberland in the Percy chapel in Westminster Abbey. But while the Percies claim the right of sepulture, the chapel forms an integral part of the abbey. It is under the guardianship of the Dean; and if required for any portion of the ordinary service of the church is at his disposal as much as any other part of the sacred edifice. And this is only one out of several chapels, in this abbey alone, including the Chapel of St. Edward.

Here, then, seems, to be a good reason for the opinion that no exclusive proprietary right can be held to exist in ancient chapels which have become portions of parochial or cathedral churches by the long prescriptive usage of opening into them in such a manner that one service may be common to the chapel and the rest of the church. Protection has been accorded, in times when protection was needed, to buildings of this nature which are so attached, while others of no less antiquity and beauty were, in many instances, ruthlessly swept away. The rite of the Reformed Church has preserved the chantry tombs of ancient benefactors. On the other hand, that retributive respect is due to the site which should forbid the attempt to show it the disrespect of attempting a fresh severance of the chantry chapels from the churches, now that there is no especial danger attaching to their isolated existence. Such, we take it, is the verdict of true reverence, and the opinion of true taste. We shall look with interest to see whether such is also declared, in the case of what has long served as the chancel of Arundel parish church, to be the law of England.

In all these and the like questions, public policy declares that property has its duties as well as its rights. It has taken long and persevering effort on the part of Sir J. Lubbock and his friends to interpose some slight check (as to which he has our heartiest goodwill) on the ruthless barbarism which has, within the last century, swept from the ground so much of priceless value, including monumental relics at Avebury. It cannot be admitted,—even if it prove to be law it is not right,—that any individual or family should have the power, not only to use, but to destroy (or to ensure the destroyal by neglect of) what are, in fact, national monuments. The sanction of hoary antiquity should be respected even by those who do not regard the consecration of the church. When this is not the case, the nation should make its voice heard. If it be made, as it has been made by direct legislation, a crime to destroy testamentary papers, how much more may the law be called on to forbid the wanton, or the heedless, destruction of the yet more precious testaments wrought in stone and tabernacle work by our ancestors? Nor can it be denied that the attempt to withdraw from the use of the public service of the Church chapels and chantries which, in fact (whatever be the case in law), have long formed portions of the sacred structure, is a proceeding somewhat akin to the destruction of ancient monuments.

We would put it to the Duke of Norfolk that it is doing an ill service to his own fame, not to say to his own faith, to oppose to the good work of erecting the cathedral of St. Philip the not good work of attempting the disfigurement of an ancient church, venerated by his ancestors, and of which the existing rite is followed, not only by the majority of his countrymen, but by a noble branch of his own house.

Coal Shipping Machinery.—Mr. Graham Smith, C.E., of Westminster-chambers, has recently invented and patented an apparatus for shipping coal which appears to have much to recommend it. An ordinary coal-train as it arrives on the quay is composed of every description of wagon, and the coal-hoists as at present constructed cannot deal with these without a considerable amount of sorting and arrangement of trucks on the quays. This involves labour, and the maintaining and working of many points, sidings, and turntables. Mr. Smith's apparatus dispenses with these, and is understood to be capable of discharging an ordinary coal-train as it arrives on the quay. He simply brings a line of rails parallel with the coping line through his machine, and places a turntable on the rising and falling platform. Consequently, it does not matter at which end the wagon tips, or in what position it is run on to the machine.

A COLLECTION OF REPORTED DECISIONS RELATING TO ARCHITECTS, SURVEYORS, AND BUILDERS.

BY E. S. ROSCOE, BARRISTER-AT-LAW.

OUR columns frequently contain reports of litigation arising out of building contracts, and we are frequently asked for information upon points in which some legal decision is involved We therefore considered that it would be of use, or at any rate of interest, to our readers, if they could possess a short epitome of the decisions which have been reported since the year 1756 concerning architects, surveyors, and builders. There are, of course, numerous cases to be found involving principles affecting these classes of persons in which architects and builders are not actually concerned. With some exceptions, which are much to the point, such decisions are not included in this collection. It thus almost entirely contains only cases in which architects, surveyors, or builders have been immediately concerned.

Mr. E. S. Roscoe, barrister-at-law, has undertaken to execute this work for us, and to add a few short notes explanatory of some of the decisions.

CERTIFICATES.

WHEN it is stipulated in a contract between a builder and a house-owner that payment shall be made after the architect has certified that the works are properly completed, it is a condition precedent to the establishment of a claim by the builder against the house-owner that such certificate has been given by the architect.—Morgan *v.* Birnie, 9 Bingham, 672 (1833).

[Confirmed in 1850 by Milner *v.* Field, 3 Exch., 829; 20 L. J., Ex., 68, in which it is stated that even if the certificate is withheld by fraud, the builder cannot recover against the house-owner if he pleads the fact that a certificate has not been given, but that the builder has his remedy by an action for damages; but this is not in accordance with Batterbury *v.* Vyse, 2 H. & C., 42; 32 L. J., Ex., 177.]

THE architect may certify by word of mouth, unless the contract between the builder and house-owner expressly stipulates that the certificate shall be in writing.—Roberts *v.* Watkins 14 C. B., N. S., 592; 32 L. J., C. P., 291 (1863),

A CERTIFICATE that the work has been done in a satisfactory manner means a document or expression which states this fact, directly or indirectly; and a letter from the architect, merely enclosing a builder's account checked by him, is not a certificate.—Morgan *v.* Birnie, 9 Bing., 672 (1833).

AN architect's certificate is valid without reference being made in it to the amount that may be due to the builder [unless there be any special provision in the contract that the amount due shall be stated in the certificate].—Pashby *v.* The Mayor and Corporation of Birmingham, 3 C. B., 2 (1856).

WHEN it is stipulated in the contract between the employer and contractor that a written order must be given for extra work, and no such written order is given; yet, if the architect at the end of the engagement makes a certificate allowing such extra work, it is conclusive and final, unless his conduct has been fraudulent.—Goodyear *v.* Mayor of Weymouth, 35 L. J., C. P., 12 (1865).

CERTIFICATES given during the progress of the work in order that interim payments by way of advances may be made to the contractor by the employer are not final, but are merely statements of the weight, &c., and contract price of materials on the ground; and the payments made under these certificates are altogether provisional, and subject to readjustment at the end of the contract.—Tharsis Sulphur Co. *v.* McElroy, 3 App. Cas., 1040 (1878).

[This and the preceding case when read together seem to contain in a short form the effect of certificates in regard to written orders for extra work. Compare also Lamprell *v.* The Billericay Union, 18 L. J., Ex., 283 (1849).]

WHEN a builder brings an action against the house-owner for sums due in respect of work done, and the architect has certified for a sum less than that which is claimed, the house-owner must plead the fact of such certificate having been given in an action at law, and not seek an injunction to restrain the continuation of the action in the Chancery Division of the High Court of Justice.—De Worms *v.* Mellier, 16 L. R., Eq., 554 (1873).

WHEN an architect fraudulently, and in collusion with the house-owner, withholds a certificate that the builder has executed his work in a satisfactory manner, such builder, if the architect has made the contract with him as agent for the houseowner, can sue the architect for damages.—Ludbrooke *v.* Barrett, 46 L. J., C. P. D., 798 (1877); 36 L. T., N. S., 616.

[The principle of this judgment would seem to be applicable to a case where the houseowner, and not the architect, had made the contract with the builder if fraud could be proved against the architect. See next case.]

THE builder may under similar circumstances sue the architect, even if the contract were entered into with the house-owner and not with the architect.—Per Coleridge, C. J., Stevenson *v.* Watson, W. N., March 22, 1879, p. 52.

THE builder may bring an action against the house-owner for the sums due to him for work done, though the architect has not given a certificate, if such certificate has been withheld by the fraud of the architect, in consequence of collusion with the house-owner and by his procurement. — Batterbury *v.* Vyse, 2 Hurl. & C., 42 (1863); 32 L. J., Ex., 177.

[Cf. Scott *v.* The Corporation of Liverpool, 1 Giff., 216, where, since no collusion or corruption was proved, the suit by the contractor against the corporation was dismissed; and Bliss *v.* Smith, 34 Beav., 408. The principal decision is further confirmed by a dictum of Erle, C.J., in Goodyear *v.* The Mayor, Aldermen, and Burgesses of Weymouth, 35 L. J., C. P., 12.]

WHEN the conduct of the architect has not been discreet, impartial, and fair, in giving certificates, so that the builder is a loser thereby, the latter may bring an action against the house-owner for his charges.—Pawley *v.* Turnbull, 3 Giff., 70 (1861).

[The following was the form of the decree in this case:—"It appearing from the evidence that the defendant Hay (*the architect*) acted improperly and unfairly in the exercise of the powers conferred upon him by the contract in the pleadings mentioned, declare that the plaintiff is entitled to recover from the defendant Turnbull (*the house-owner*) the full amount of 2,590*l.*, the contract price, and the sum of 190*l.* for extra work."

It will be observed that in this case certificates had been given, but that they were not fairly made; in the previous case of Batterbury *v.* Vyse the certificates had been withheld altogether.

It is scarcely necessary to observe that if similar conduct in the architect had been proved which was injurious to the house-owner, and the architect had given certificates which showed more money due to or work done by the builder than was in fact the case, the house-owner, on the principle underlying these decisions, would be able to bring an action against the architect for any losses sustained thereby. It is also to be noticed that the case of Pawley *v.* Turnbull, *supra*, is not very easily reconciled with that of Clark *v.* Watson, 18 C. B., N. S., 278; 34 L. J., C. P., 148 (1865), which was an action by a contractor against his employer for the amount of his charges, and it was averred that the work had been properly done, but that the surveyor "had wrongfully and improperly neglected and refused" to certify. The Court held the allegations were not sufficient to entitle the plaintiff to succeed. It would appear, however, that the Court did not consider the word "wrongfully" equivalent to "fraudulently." But in Pawley *v.* Turnbull there was nothing actually fraudulent, that is, deceitful, but merely the grossest unfairness towards the builder of an open character, a plain violation of duty; considering, however, that the rules of Equity are now to prevail in all the courts,—the doctrine of Pawley *v.* Turnbull,—which was decided by the Court of Chancery, would seem to be the governing principle rather than the narrower rules of the Common Law.]

WHEN an architect carelessly and negligently performs the work required to give a certificate, so that the builder does not receive all that is properly due to him, he cannot bring an action against the architect if no fraud is alleged.—Stevenson *v.* Watson, Weekly Notes, March 22, 1879.

[It is believed that this case will go before the Court of Appeal, so that the above is a correct definition of the law, subject to the decision of the Court of Appeal.]

THE RIGHT OF WATER COMPANIES TO STOP THE SUPPLY OF WATER.

THERE is, probably, no doubt that within a certain number of years, the metropolis and most of the large towns in England will manage their water supply through their municipal representatives. This, as many of our readers are aware, is already the case in regard to Birmingham and Liverpool and some other towns, and it is obviously the right principle that the municipalities should control so important a branch of town work as the supply of water for domestic and public purposes. In saying this it is not to be assumed that we necessarily approve the Bill promoted last year by the Metropolitan Board of Works, because to our minds, apart from other objections, the Metropolitan Board of Works has still quite enough to occupy it without taking further burdens on its shoulders, nor is it a really representative body, subject to the direct control of the public in the same way as the governing body of a great provincial town such as Liverpool. While, therefore, we in London and the inhabitants of other towns are still dependent upon water companies for our supply of all the water we use, it is of importance not to let pass without notice any decision connected with the relative rights of water companies and the public in connexion with the supply of water, especially for domestic purposes.

Quite recently a decision of some importance has been given by the Common Pleas Division of the High Court of Justice upon this question in the two cases (tried together) of the Sheffield Waterworks Company, appellants, *v.* Wilkinson, respondent, and the Same v. Corbridge. The case at present is only briefly noted in the reports, but the main point of the decision is plainly apparent, and we should add that both cases are really identical. By section 74 of the Waterworks Clauses Act, 1847, 10 & 11 Vict., c. 17, it is enacted that "if any person supplied with water by the undertakers (that is, the water company), or liable, as herein or in the special Act provided, to pay the water-rate, neglect to pay such water-rate at any of the said times of payment thereof, the undertakers (the water company) may stop the water from flowing into the premises in respect of which such rate is payable, by cutting off the pipe to such premises, or by such means as the undertakers shall think fit, and may recover the rate due from such person if less than 20*l.*, with the expenses of cutting off the water and costs of recovering the rate, in the same manner as any damages, for the recovery of which no special provision is made, are recoverable by this or the special Act; or if the rate so due amount to 20*l.* or upwards the undertakers may recover the same, with the expenses of cutting off the water, by action in any court of competent jurisdiction." Now, in regard to this section we may say that we question whether this principle of allowing a company to cut off water from premises at all is right or judicious. It must be borne in mind that it is a very large power to intrust to a company supplying persons with one of the necessaries of life, and it must be remarked that by stopping the supply of water the health of a whole household, nay, even of a neighbourhood, may be impaired. Further than this, it is not as if householders paid for water according to the amount consumed, as gas is paid for by the meter system. Thus a poor man may say that in effect he is strictly economical with his water, and that, in fact, a company are cutting off his whole supply, because he cannot pay at once for a great deal more water than he actually uses. It may be answered to this that if a man will not or cannot pay for an article which he consumes by using, the supplier of that article is in no way bound to give him more until

he has paid for that which he has already consumed. But it is obvious that water does not stand on the same basis as other articles of daily use. It is in effect a natural element open to the use of all mankind, and which, by the exigencies of modern civilisation, must in town be supplied by some artificial means and by some third parties. A woman in a country village may go to the village pump a dozen times in the day, and she pays nothing for the water; but the same person in a town is mulcted every year in a certain sum before she can have what her country sister obtains without cost. And it is not in principle the actual water for which the companies make a charge, it is for the cost of bringing the water to the householder's door with a certain margin of profit upon such work as an industrial undertaking. Nor should it be forgotten that water companies have full power to obtain the payment of their rates by proper legal process, and we think it is impolitic to place such arbitrary powers in the hands of companies whose officials are likely to use them often without discrimination, as the case which we are now discussing shows.

With these observations we will now proceed.

The occupiers of the two houses in question previously to those who were the litigant parties in the present case had failed to pay their rates, and, consequently, under the 74th section, which we have already set out, the company cut off the water supply. Then the new tenants (the litigants in this case) very naturally did not see the justice of paying the arrears of rates not due from them, and claimed, upon tendering the rates which would become due from them, to have the water again supplied to their houses. This, however, the company refused to do, and thereupon the new tenants summoned the company before the stipendiary magistrate of Sheffield for penalties for neglecting to supply water to their houses after the rates in respect of such new supply had been tendered. The powers of the tenants arise out of section 43 of the Act already mentioned, and so far as it is material to this point it runs as follows:—"If the undertakers (the company) neglect or refuse to furnish to any owner or occupier entitled under this or the special Act to receive a supply of water during any part of the time for which the rates for such supply have been paid or tendered they shall be liable to a penalty of 10*l.*, and shall also forfeit to the Town Commissioners, and to every person having paid or tendered the rate, the sum of 40*s.* for every day during which such refusal or neglect shall continue after notice in writing shall have been given to the undertakers (the company) of the want of supply." The magistrate decided in favour of the persons whom we have called the new occupiers, and against his decision the company appealed. Now, we said in commenting on the propriety and justice of allowing water companies to cut off the supply, that it was a power liable to be misused, and we venture to think that this is a real example of an abuse of the extraordinary powers vested in the water companies in this respect. It is really wholly unjust because A has not paid his water-rates, that B who succeeds him in his tenancy shall have no water until he has paid the debts of A, a total stranger to him. There is no likeness between such succession and that, say, of a son succeeding to the estate of his father. There a just legal principle compels him to pay the debts of his relative, for the man, says the legal maxim, who receives the benefits must also bear the concomitant burdens. It would really be a waste of time to argue this point further, it is so obviously clear. When, however, the case came before the Common Pleas Division, the judges decided that there was no power in the Waterworks Clauses Act by which the company could be compelled to put on the supply again, and they therefore reversed the decision of the magistrate. It is added, however, in the report of this case, which, as we have said, is yet only a mere note, that "the Court, however, expressed an opinion that the appellants (the water company) had no right to withhold the supply of water until the arrears of rates had been paid." By this, we presume the Court meant that if the supply had not been cut off then that it could not be stopped as against a new occupier, if he did not pay up the arrears due from his predecessors; because if the company had no right to keep the supply stopped in respect of the arrears due from the last occupier, the decision of the magistrate was right. In regard to the correctness of this decision, regarded from a legal point of view, we do not propose to say anything. But it is obviously a hardship that one occupier of a house should be compelled to pay the debts of his predecessor, who may thus snap his fingers at his creditors. Nothing, in fact, could be more obviously unjust. But the point is one worthy of consideration by those who are concerned with houses, as is also the whole principle of stopping the supply of water in case of the non-payment of water-rates.

THE ESTABLISHMENT OF A NATIONAL THEATRE.

It cannot fail, we feel sure, to have surprised a very large number of the persons who in the present day take a genuine interest in the popularisation of the arts, that there should exist more than one opinion regarding the necessity for the establishment of a National Theatre in England, similar to that which France has for so many generations enjoyed, and which is so well known to the world as the "Théâtre Français."

In the public expression of these views, few opinions for and against the project are more entitled to our esteem and attention on such a subject than those* of Mr. Planché, a name endeared to the whole artistic world by old associations. More than half a century since, Mr. Planché was positively the first Englishman who gave to the world in a tangible and consecutive form the correct authorities from which stage-managers could place on their boards the historical characters immortalised by Shakspeare, in costumes such as inquiry shows us were worn by the men of the days represented. And who that has passed more than middle age cannot recall the early classical plays of Mr. Planché, which afforded a thorough enjoyment to the most critical, and which could not fail, were they now revived, to please the correctly fastidious. Such an authority, therefore, as Mr. Planché should be listened to even in the merest point of detail, and in carrying out the project of the establishment of a National Theatre, the name of J. R. Planché should stand by acclamation at the head.

Still, may we not be allowed to differ in respect to the opinion that Mr. Planché and others have expressed, that the first great difficulty connected with such an institution it would not be easy to overcome?

To attempt at once to obtain Parliamentary interest and a grant for such a purpose would be, indeed, a difficulty at the present time almost insurmountable; but how many enterprises have been carried to a point approaching perfection long before it has been deemed necessary to secure the protection or the aid of the State?

The Royal Academy of Arts, although strictly instituted under royal patronage, with the understanding in its early years that the State would supply its pecuniary wants, has never received any assistance beyond the use of galleries free; and from its very first year of inauguration, more than a century since, has been completely self-supporting. In the society of those days a few earnest men, like all of us, it is true, with diffierent views, and one or two discontented members, formed an association amongst themselves, which has arrived at a position which, in spite of repeated opposition and some shortcomings, yearly increases in importance.

There can be no reason why a dramatic society with aims the most ambitious, should require, in its early days of formation, any very large funds to soon place it on a proper level, a level which, with success, could be easily raised; in fact, any very large amount at the outset of such a society would most probably be fatal to its prosperity. The results that throughout ages have been arrived at from small beginnings are scientifically and morally proverbial; and surely, if a society like that of the "Arundel," or several other similar associations, commencing by a few subscribers of a guinea each, have contrived to supply not only their members, but the world at large, with such numerous reproductions of noted works, why should not a dramatic society, commencing with small but adequate means, hope some day, by proper management of its affairs, by judicious conduct in council and committee, by strict economy and watchfulness in all matters of detail, by the avoidance of erroneously calculated large gains, and by a sincere desire for the promotion of the best art, hope in time to arrive at a condition which might place an English theatre on an altitude as high as that at which the Théâtre Français arrived in its best day? And let those who have but little idea of how high the altitude must have been visit, as often as they are able, the performances of the company of the Théâtre Français that London society is about to enjoy during the next coming months.

The simplest, at the same time the most severe, reproach that any competent French critic brings against our stage, and against all our art, is, to use their own untranslateable expression,—one that we in the present day of desire for preserving ought certainly to appreciate,—our want of a *conservatoire*. Now, if by carrying out in some way the proposition for a national theatre, we can arrive, no matter in what time, at something like what is understood by a *conservatoire*, the gain to the future would be incalculable.

At the same time, it must be fatal to such an undertaking, as it is fatal to all art, that the first thought should be,—"Is the thing likely to be a commercial success?" Of course, if a national theatre is to be projected with the idea that it is at any time to realise the enormous gains that we are told certain dramatic performances occasionally secure, that would be entering into competition with the business of the dramatic world, which of late years has been so much mixed up with other interests that it is almost impossible to scientifically separate the component parts.

One point it would be important for the society always to bear in mind, that however humbly it might commence, it should look forward to a future as much as possible resembling the famous Théâtre Français, with the ends and aims of which all those interested in theatrical matters must be perfectly acquainted.

But as such a project, to work easily, undoubtedly requires the command of a large capital, the society could only hope in the first place to try how far there exists a sufficient proportion of the English public who desire to see day by day, and night by night, the realisation on the stage of the best dramatic works.

The first performance of a society commencing in this way might take place in some small theatre hired for the occasion; the press alone, after the first performance, would furnish a mass of information and a statement of opinion that would be invaluable, giving the project at once a popularity that could not fail to secure it in the first place the necessary pecuniary means of subsistence.

If the already existing provisional committee could form into a society sufficiently strong, how perfectly delightful might not even its beginnings become, the members all impressed with this idea, at least, that a theatrical library (that at the French theatre is famous) is an essential; that absolute correctness in every matter of historical and social detail in the scenery and the costume should be observed in the production and performance of every play; that those actors only should be required to take any share in the society who are fully impressed with the conviction that by work, by practice, and by study alone, is any good art to be acquired; that absolute obedience to the managerial portion of the undertaking is necessary; and that ability may be shown as easily in the minor parts as in the principal characters. With such an understanding and accord between the members and those they engage to assist them, the possibility of any unseemly disagreement which some critics, with reason, bring forward as a fatal objection to such an undertaking, would be reduced to a minimum.

In connexion with the society should also be established a dramatic school, or *conservatoire*, on principles resembling the French *conservatoire*. Schools of this nature exist in every country on the Continent. The want of them leads to such erratic and unforeseen results in England on the professional ranks. From this school, after an examination for entrance and a succeeding period of technical dramatic instruction, the actors and actresses might be drafted off on to the stage to fill those parts for which their special talent and study may have fitted them. Competent traditionalists in dramatic matters are to be found in every country, and by the foundation of such a *conservatoire* it would be strange if a somewhat higher standard of dramatic taste than now exists would not be fostered.

* See *Builder*, p. 302, *ante*.

The complaint has with reason been made, that in the present day our rising actors and actresses neglect the older and more Classic plays and their delightful traditions for the fascinations and apparent ease of the modern dressy comedy.

Should the society in the course of a few years be able to point to even one actor or actress of genius who had been fostered by their training, it would be no small matter of pride, while on their own boards the society could (as in the Théâtre Français) invariably ensure a first-rate company, with from time to time a genius with an enormous ability for work.

As a minor detail, but one which merits attention in studying to bring before the public some explanation of the plan of the National Theatre, we would venture to submit that the precedent established long ago, and strictly adhered to by the French Theatre, might at first be followed, in the absence of an orchestra. That for the performance of the really artistic drama equally artistic music is necessary is evident; but the expense of such an orchestra, as all professional persons know well, is not small, and the sum which would thus have been appropriated might be more usefully devoted to the careful production of the pieces.*

With the proposal that the scheme of the National Theatre should be commenced on a small scale, and therefore more easily rendered perfect in its details, and then, judging by the reception if the plan meets with public approbation; with the further suggestion of the establishment, in connexion with the society, of a dramatic *conservatoire* on correct principles, it is more than possible that the existing opposition to the scheme will be considerably lessened, and in course of time that England will be able to boast the possession of a National Theatre, powerful only for elevation and delight.

DERBY.

THE great emporium of the Midlands unites the dignity of age with the vigour of youth: its history is ancient and honourable, and its growth has not ceased, but taking advantage of its position it has become the heart, if not the brain, of a vast and rich district. It is the Issachar of towns, which has seen that the land is pleasant, and has bowed its "shoulder to bear and become a servant unto tribute." Its past has benefited greatly from the great railway system with whose fortunes its own are so largely interwoven, and with whose prosperous present it has also prospered. Into the troublous past it is needless to peer. Derby is now, emphatically, an industrial town, and there is no need to revert to the legends of church building at the time of the Conquest, to the schools founded in the reign of the second Henry, nor to the brawls of generations resolved long ago into their elemental dust. Since the days when the silk manufacture was planted there, and the original silk-mill began to exert its influence on the commerce of the district and even of the country; from those wherein porcelain manufacture was introduced, the "white biscuit" of the town first known, and the trade of the town began to widen and broaden, the future of Derby has been one of almost uninterrupted growth,—not only in bulk, but in all the essentials of towns, and in some which are deemed accompaniments, but should be none the less necessaries.

Let us look at Derby as it was a little more than forty years ago, and then contrast it with what it is at the present time, and we shall see not only the extent but also the nature of the growth. In 1833 Derby flourished, but in a miniature method to what it now does, for the facilities of traffic and travel were of the olden type. Silk in various shapes formed one of its chief manufactures, porcelain, spar, and marble industries were then of comparatively greater importance than they now are; rolling-mills, tin-plate mills, bleaching-grounds, cooperies, and corn-mills were then of subsidiary importance, and the extensive railway works were not. The form of government was the "mayor, nine aldermen, fourteen brethren, and fourteen capital burgesses"; the court-leet lingered, and the court of requests was still in existence. There were five parishes, and two then new and "very ornamental" chapels of ease, whilst eight or nine shades of dissent were represented in the town, having their "local habitations." The rich collection of paintings and sculpture given by Mr. Strutt was then lodged in St. Peter's-street; the Mechanics' Institute was young, and the population of the borough, including parts of parishes which overlapped its boundaries, was then only 29,708. Coaches and carriers formed the means of conveyance, but the vans of the Pickfords and Wheatcrofts found Derby a convenient centre, and these firms had located themselves there, and were carriers by water also. Turning again to trade, we find the bankers, even the known and esteemed, were the Irongate-located firm of Crompton & Newton, the Derby & Derbyshire Co., Evans & Samuel, and Samuel Smith & Co. Hosiery and similar manufacturers were found there in plenty, with lace, thread, and tape makers; clogs were made, marble shaped, ten silk manufacturers had their factories there, and there was the usual gathering of miscellaneous trades. Its institutions, its charities, and its appearance were of the olden types; and though there had been a steady progress, it was slow, and it by no means foreshadowed either what the town would become, or what was the institution it would nurse into commanding proportions. Unquestionably, the prime mover in the changes which, in forty years, have come over Derby has been the system of railways of which it is the centre; for they have not only permitted the growth of many of the old industries, but they have been also the prolific parents of more. Thus the population has grown until at the last census it was 49,810; and there had been considerable growth in its iron industries, and to some considerable extent in those of its silk, cotton, and porcelain manufacturers. Its county takes high rank amongst those producing certain classes of iron ores, and includes the Butterley and other famous iron-works; it has 274 collieries, with an output of 7,000,000 tons of coal; its hundred lead mines yield 5,000 tons of lead ore yearly; and from the traffic these yield its traversing railways largely benefit. When by the formation of a little line of railway intended to join some of the mineral districts of the Midland counties, thirty-seven years ago, the foundation of the Midland Railway was laid, there was little thought of its future extent, and as little of the effect upon Derby. That small nucleus has given place to a company in the front rank of the world's carrying systems,—to one in which 65,207,000*l.* is invested; which has the princely revenue of 6,500,000*l.* yearly; which pays about 2,000,000*l.* yearly in salaries and wages; whose system stretches over 1,500 miles, and whose shareholders number more than 25,000. Its chief offices are at Derby, and there are its vast locomotive and carriage shops, and its stores; whilst impinging on the city, paper-mills, foundries, and works of so many kinds are all more or less contributed to by and contributory to the vast Midland. Lead and tin are melted and worked, soap, silk, cotton, porcelain, and spar are amongst the varied industries, with a dozen others on which Derby depends. Nor is this growth and industrial greatness unrepresented by additions to the architectural and other attractions of the town. Its churches, Anglican and Roman Catholic, include some the proportions of which are magmagnificent; and among its chapels, its schools, marts, and other public buildings, there are some good architectural specimens. Its new recreation-ground and the beautiful Arboretum furnish lungs such as many larger towns might envy. And these are only the outcome of the vast amount of life and sentiment stimulated by a score of societies, and contributed to by more than one or two munificent benefactors, whose wealth has been increased by the growth of the industries of the town, and who have given it back green fields and splendid erections in return. Looking on Derby, whilst the spires of All Saints' and St. Alkmund's, the embattled tower of St. Peter's, the tower of the Town-hall, and the circular shot-tower, rise from the mass of buildings and works, there is more than one green oasis in the aggregation of erections, and the streak of the Derwent running near the rail is seen out into the woods and parks that stretch out Belper-wards.

The industrial future of Derby should be a bright one; for its situation gives it a command of some trades; and the varying nature of its industries subjects it less to the fluctuations of trade than are towns dependent upon one class of industries. On the other hand, its rate of progress is not marked by the bounds that towns planted in the midst of great mineral centres sometimes make; it has shown a steady rate of progress, accelerated, indeed, since the Midland days, and that rate bids fair to continue. Unquestionably, the town is to a large extent bound up with the future of the great railway of which it is the headquarters; but since that railway acquired practical completion by the formation, first, of its costly extension to London, and then of its great route to the North, its prospect has been an assured one, and yearly its calls upon its locomotive and carriage works, and its other contributory industries, are greater, so that a larger expenditure of material and of labour is needful, and at its centres there is an ever-expanding demand for work. On that, on the facilities for industry its position and its water privileges give it, and on the fame and skill it enjoys and has acquired, the industries of Derby rest securely, and for them it may be safely anticipated that there is a steady growth in prospect for the future as in the honourable past of the town.

* By the absence of the orchestra several lines of stalls are also gained, an advantage which more than one theatre in London has been quick to understand.

THE FRENCH GALLERY, PALL MALL.

THE twenty-seventh annual Exhibition at Mr. Wallis's Gallery, which opened this week, is not a remarkable one as exhibitions go; and only one of the four centre pieces is of the highest class of excellence. This, however, Muller's picture of the "Market Place, Cairo" (70), lent by the Austrian Government, is well worth the attention of those who have not seen it, as one of the most uncompromisingly real representations of every-day Eastern life that we have ever seen, and remarkable at the same time for the fact that there is no hardness, no paintiness, no obtrusion of technical finish merely for its own sake or to show the painter's cleverness of manipulation. The style is broad and massive, the study of character, both of the race and the individual, fully successful in its aims. The painting represents a large and motley group of dusky persons of the lower orders congregated outside (apparently) the walls of the city, talking, bargaining, and recommending their wares. It is curious to compare this picture with the general run of representations of the noble Arab (for these people are, if not strictly Arabs, at least of the same race and style), which give us a melodramatic handsome chieftain style of man with wonderfully polished and richly tinted skin, with this depiction of him by a painter who has, at all events, nothing melodramatic about his work. Not that the native, as shown in this picture, is contemptible or repelling; but he is most distinctly not heroic, and hardly picturesque, except in a very subdued sense; and the colour is a somewhat dirty or dusty brown, instead of that glowing bronze hue with which painters delight themselves so often. One or two small naked children, with very large heads, very large stomachs, and very weak legs, contribute additionally to modify our enthusiasm for this type of mankind. The artist has succeeded in producing a group which is effective in composition and at the same time apparently unforced and unstudied; a real scene rather than a picture. The painting of the old heavy walls and towers, with the baking sunlight upon them, is very fine; it is seldom one sees a picture so thoroughly solid in execution.

The only other of the central works to name is the well-meant but not satisfactory painting by M. Gysis, "Napoleon Gefangen!" (18), not representing Napoleon, but a group of townspeople in a queer narrow street, receiving and calling out to each other the great news. We do not clearly make out the whereabouts (as to country) of the scene; it looks rather Spanish than German: either supposition would go with the story that is told. The moment is a highly interesting one for the painter, but we can hardly feel that he has made the most of it: it does not impress us with any reality.

After Muller's picture, the chief interest of the collection lies in a good many small works which are not prominently placed; if we except Spring's rather larger work, "Catechising" (8), which certainly might have had a centre position in place of some others that seem unduly honoured; it is a work remarkable for quiet humour, and very fine in execution. Among the small *genre* works, those of Seignac are pre-eminent. This artist, starting originally in the line of E. Frere, and certainly under the inspiration of that charming painter of children, may be airly said to have surpassed his model.

Presents from the Fair" (15), and "A Sad Mishap" (23), are perfect as renderings of child nature, half humorous in the first-named work,—unconsciously humorous, that is, for the little actors are as serious as possible in the transaction of their weighty concerns; in the latter, where a little girl is comforted by a slightly bigger boy for the fall and breakage of the milk-jug, there is a real pathos and tenderness quite removed from the mere sentimental. Seignac's feeling for colour is fine, too,—much more so than is the case with some of the recent painters of peasant life. Frere himself is not, perhaps, quite at his best in his little picture of "The Young Artist," pretty as it is. Among scenes of child and peasant life, we have one from Knaus, "Spring Blossoms" (44), which is worth note, not only for the characteristic figure of the child gathering flowers in the long grass, but the pleasant fact of finding a picture by this able artist with some landscape and light and brightness in it, in place of the substratum of dirty neutral tone, on which most of his figures have been displayed. Even his "Spring," however, is not a very bright or vivid Spring from an English painter's point of view. The more serious aspect of peasant life are exemplified in Jules Breton's "La Glaneuse" (150), a single figure of a sturdy but melancholy-looking young woman coming laden from the corn-fields, and in a larger work by Sadee, who owes his inspiration to Israels, perhaps too palpably. The latter painter is represented by one work, not at his best. There is no large battle picture, but a considerable number of those small military episode paintings of which there are so often good specimens to be found in this gallery, and in which French artists especially succeed in so completely realising the actual facts of combat or military situation, as in Sell's small work, "The Attack" (159), where the soldiers are going down prone on their stomachs in the thick snow to fire from under cover of a wayside hedge, and in Medard's "Preparing for an Attack' (55), showing a pioneer party trenching across a bare road, and pulling down some equally bare-looking trees, to assist in the defence; it cannot be to prevent their affording cover, for their trunks are as bare and nearly as thin as whip-stocks. There is one Meissonier, a little figure that would be remarkable under any other name than that of its artist, but as a Meissonier it passes as average. Small landscapes, by Windmaier and others, have much in them, especially some of Heffner, which are beautiful, though slight; "Evening" (49) is a lovely little thing, in the highest style of landscape art, so far as feeling and treatment are concerned. Bockmann's small representation of "A Market-day in Hungary" (64), is one of those works (somewhat rare) which at once impress us with their truth and reality in representing the scene and people which it illustrates; and another little work by Pasini, "Hunting the Gazelle" (73), is at once ludicrous and almost touching; the little antelope bounding along the road, followed by two horsemen in a mad gallop, a dog as mad on one side, and a hawk rushing at the prey with outstretched wings on the other side: the gazelle stands a poor chance.

There are some brilliantly (or gaudily) painted figure-subjects that are sure to be looked at, but which belong to a very *clinquant* style of art, and do not interest us. We should, however, mention with appreciation the very pretty, more than pretty, "German Lady of the Eighteenth Century," by Kaulbach (11). This artist has painted several small-size heads under this title; the present is life-size, very rich in colour, and though presenting no intellectual interest, is certainly a very charming object, and a fine piece of execution in painting.

SOCIETY OF BRITISH ARTISTS.

This society has gone back to its old rooms in Suffolk-place, having probably found the Conduit-street rooms a mistake. The public, for some reason, will not find out these rooms. The Society is very persevering under a good many years of discouraging results; and we are glad to see that the effort which has evidently been made to re-open the Suffolk-street exhibition with a good show is not unsuccessful. The exhibition is a very much better one, even in proportion to the larger number of works exhibited, than the more limited one in Conduit-street last year. Of course, some of the good things are the contributions of outsiders; on the other hand, one of the worst of the smaller things we noticed bears the name of an R.A., and in that connexion is almost incredible. Among the members' contributions is a beautiful work by Mr. J. W. B. Knight, "Manorbeer Castle, near Tenby" (43), a not very large painting, containing some of the highest qualities of landscape art: the old castle stands out grandly in the middle distance, which is broadly painted and full of atmosphere; the smoke from chimneys near streaming upward in parallel columns is a little incident that helps to give the character of the day; the foreground, a stream and water-plants, is carefully studied, as also the gulls that fly about near the foreground and are sharply relieved against the landscape. Other works by this artist are all good. Mr. Clint's "Calm Evening" (79) recalls another generation of landscape-painters, who had also their ways of painting, and their receipts for effect; very good in their day, but a trifle *passée* now; still, one regards a work of this kind with an affectionate lingering of the memory over old days. We do not remember, at this moment, much about Mr. E. Ellis or his former work here, or is he a new member? Anyhow, he is an acquisition in this year's exhibition; all his landscapes have power, and a broad, artist-like style; "On the Yorkshire Coast" and "A Forage Party" in particular. The latter (119) is a bit of English country landscape refreshing in its light and air and truth of tone; it is true that it suggests an imitation of the manner of another painter, but it is a very good manner. The same artist has a large and rather rough, but very powerful study in the water-colour room, "After Sunset in North Wales." Among figure subjects we must be allowed, for a moment, to pass over the members and give the first mention to a distinguished outsider, Sir J. Gilbert, whose painting of Corporal Trim making the first suggestion to his master of the mimic fortifications (30) is an admirable piece of delicate humour, so far at least as regards Uncle Toby, whose face as he just begins to take in the glorious idea of the Corporal shows a kind of infinite hope and expectation which is delightful. Trim does not quite satisfy us, but every one will have his own notion of the immortal corporal, no doubt. The picture is an admirable piece of colour as well as of character. Sir John is always surprising us by exhibiting a new turn of talent, and we are quite obliged to him for showing so satisfactorily that he can do something besides the class of picture from which he made his reputation, but which he has surpassed now by works of much greater interest and value. We fear there is not much to be said for the figure pictures as a rule, but there are some good things. Mr. Gadsby's "Tired Out" (261), is a very charming painting of a little girl who has fallen asleep on the floor; pretty in attitude and expression, and fine in colour. Mr. Caffieri's drawing-room interior called the "Music Lesson" (13) cannot be passed over, but it is not pleasing. The colours are harsh, the young ladies (still worse) are vulgar; the old music-teacher at the piano is the most successful figure, or rather head, for his figure is not seen. Mr. Gordon has taken a great deal of trouble to interest us in the young man who is asking "an anxious question," or, rather, *the* anxious question, of a pretty young woman in long mittens, and not unsuccessfully; there is a good deal of feeling quietly and unobtrusively expressed in the countenance of both figures; but why the ghastly colour, or want of colour, over the whole? The two people look as if they had no blood beneath their skin at all. A small painting, by Mr. F. H. Potter, "Twilight" (299), is very successful in realising its intention; there is a figure of a young woman in dark dress, standing by a low fire, with nearly her back turned to the spectator, chimney-piece and ornaments dimly seen in the dusk; there is something very suggestive in this. In the south-west room, Mr. Burr's life-size study of a worthy agricultural "From Norfolk" (530) should be looked at, as also Mr. Tom Griffiths's "Sunset on the Moors" (531), Mr. Stuart Lloyd's "The Abbey Trees" (473), and Mr. W. H. Bartlett's "A Bavarian School Board Commissioner" (461), a painting which must be intended as a lesson to the London School Board, whose inspectors have been much anathematised for their lack of the *suaviter in modo*. The Bavarian Commissioner is a gentle-looking "sister" in long cloak and hood, by whom it would be a privilege to be interviewed. Miss B. Meyer's very clever little painting of "My Neighbours in Rome," should not be overlooked. Another work by Mr. Burr, "Words of Comfort" (125), though somewhat smearily painted, has good qualities in feeling and character. Mr. Morgan's very clever picture of boys tugging against each other under the title "English and French" (153), we seem to have seen before, possibly in a water-colour form; and Mr. Faed's little painting, "Rest" (69), a charming little thing beautifully finished, is, if we remember rightly, a small replica of a picture that has been in the Royal Academy.

There are a great many very good bits of "still life," that favourite and most useful means of study on the part of young artists; among them one by Miss Jessica Hayllar, dealing with the unpromising subject of bread, cheese, and a glass of beer, is remarkably successful. Among the water-colours we were particularly struck by two works by a lady, whose name is new to us, Miss Ada Bell, "Departing Day" and "The Incendiary" (565, 686); these, though small works, are really very grand in style, the former especially, and show a quite unusual force and originality of manner. There are some nice bits of terra cotta. Mr. M'Clean's bust, called "A Study from Life" (782), presents an admirable likeness of a lady whose face has been long a familiar one in what may be called intellectual London; there is another, bust also under the same title and by the same artist; and an ideal head by Mr. Mullins is named "The Lady in Comus," and has a sweetness and purity of expression sufficiently in keeping with the title.

OFFERED PRIZES, ROYAL INSTITUTE OF BRITISH ARCHITECTS.

Particulars and conditions for the guidance of competitors for the prizes offered by the Royal Institute of British Architects for session 1879-80 have been issued, and may be had of the Secretary, price 3d., or by post 4d. The prizes offered are:—

(1). The Pugin Travelling Studentship: value 40*l.*
(2). The Soane Medallion and the sum of 50*l.*
(3). The Tite prize: value 30*l.*
(4). The Grissell (Gold) Medal.
(5). The Institute (Silver) Medal and Five Guineas.
(6). The Institute (Silver) Medal and Ten Guineas.

THE JUBILEE HALL FOR BRUSSELS.

The fiftieth anniversary of the existence of Belgium as an independent kingdom will be celebrated with much magnificence next year, and already arrangements are being made in preparation for the event. Among these it has been resolved to erect a grand Jubilee Hall in Brussels, where the crowning festival, including a grand banquet and other entertainments, will naturally be held. The Minister of Public Works, on the 25th ult., brought in a money Bill, demanding a sum of 1,800,000 francs, or 72,000*l.*, for the purpose of erecting the hall in question, and the Lower Chamber voted the grant by a majority of forty-six against eighteen. After the jubilee it is intended to employ the building as a National Museum of Art, and to deposit therein a collection of products of art industry belonging to the Government, and arranged somewhat in imitation of the South Kensington Museum.

The German Athenæum.—In the rooms of this Institution, 51, Mortimer-street, Portland-place, which seeks to provide for the Germans in London much intellectual gratification, has been lately exposed a large and powerful picture by Mr. Hubert Herkomer, titled "Light, Life, and Melody." It represents a number of peasants of the Tyrol drinking beer, and enjoying themselves under the verandah of an inn, while one in the centre plays on the zither, the country being seen without. It is executed in water-colours, with all the force and richness of an oil-painting. The high lights are all produced with the penknife, and the execution is at present to some extent coarse and incomplete, but it is unquestionably delightful, and a work of genius. It will probably be exhibited at the Grosvenor Gallery.

THEATRES IN JAPAN.

BY JOSIAH CONDER,

Professor of Architecture to the Imperial College of Engineering, Tokio, Japan.

FEW Japanese buildings have a more frail and temporary appearance than the theatres, possessing no architectural pretensions, and, devoid even of the picturesquely curved and over-sailing roofs which give an elegance of outline to most of their other large buildings. Their general appearance is that of a broad squat-looking building of wooden construction, with a wide central roof of flat pitch, a clearstory, and lower lean-to roofs at the sides. The large roof has generally a low continuous lantern running along the top to admit air and light. The walls are constructed of a framing of vertical and horizontal timbers filled in with lathing, clay, and plaster, having weather-boarding nailed upon the outside. The windows are oblong openings, with wooden bars placed either vertically or horizontally, closed, in bad weather only, by sliding shutters, having paper lights, which are placed towards the inside of the reveals.

A gay appearance is given to the otherwise insignificant façade by means of large placards heavily framed, which are hung in profusion in front, and decorated with large representations of scenes from the play, in bright harmonious colours. Some of these posters extend from the ground to the eaves; and, in addition, there are often a number of bright flags on poles fixed in the pathway. The theatres of a Japanese town are generally placed together in the same district; and about them are several large tea-houses (hotels), whence it is usual to procure one's ticket and make all arrangements for seats and refreshments.

With the Japanese, as with the ancient Greeks, the performance of a play is the matter of a whole day, the theatre opening at about six in the morning and closing at dusk. This is broken by frequent and tedious intervals between the acts, when the audience adjourn to the tea-houses, or take their meals in the theatre. The building is entered from the end facing the stage, through a sort of central hall, containing racks for depositing umbrellas, clogs, and generally serving the purpose of a cloak-room. On either side of this entrance are rooms, some of which are devoted to the manager and his officers, and others to the actors. The actors have rooms at both ends of the theatre. There are also private entrances in the front communicating with some of these rooms.

Between the entrance, with its adjoining rooms, and the auditorium, or main body of the building, is a passage, running from side to side, leading to the staircases and side passages. Direct admission is gained into the pit, across the main passage, by two doorways, between which is a row of small compartments, closed in towards the entrance, but opening on to the theatre, looking towards the stage. These rooms are some of them occupied by dealers in programmes or provisions, and others by police, who attend to preserve order.

The pit holds by far the greater part of the audience; for the raised and supported seats at the sides and end, which correspond to European box-seats, are comparatively few in number. The pit-seats consist of a great number of low, box-like divisions, placed upon a floor sloping slightly upwards from the stage end. The incline is scarcely perceptible. The divisions are about 4 ft. square, and are intended each for the seating of five people, squatting upon the mat-covered floor.

There are two passages through these seats from entrance to stage, one on either side, and these are sometimes used in passing from seat to seat; but access is obtained to any part of the pit by walking along the low divisions between each compartment, the edges being made flat for the purpose. Sometimes, in addition to this simple mode of communication, there are one or two cross passages of a plank's width; these, as well as the principal side passages being always at the level of the top of the seat divisions, and consequently on the same level as the stage, and of the shoulders of the audience seated in the pit.

The main passages referred to are also used by the actors during the performance, who often approach the stage from the front of the theatre where they have several dressing-rooms. Sometimes an actor will stop to speak or act in this passage in the midst of his audience, addressing his fellow actors on the stage across the people. The passage on one's left hand as one faces the stage is called the main passage. It is wider than that on the opposite side, and more used. There is also a corresponding underground passage beneath it, and a trap-door to admit of sudden appearances and disappearances. This lower passage communicates with a wide space below the stage, where are appliances for hoisting connected with several trap-doors in the floor of the stage. A magician or ghost can thus disappear quickly from the stage, and appear amidst the audience; or, what often happens, a hero or victim slain upon the stage will rise in a transformed, ghostly apparition in the passage, illumined by a coloured light.

Some very pleasing scenic effects are obtained by the use of the upper passages; sometimes a gaily-dressed procession, or an armed suite of attendants, approach the stage in a long line, with all the slow ceremonial and etiquette which belong to the customs of old Japan. At other times an exit will be made imposing by a large train of followers; a farewell parting will be lengthened out by lingerings and looking back; or, may be, some favourite low comedian will give full play to his comic strut, action, or grimace, as he makes his entrance or his exit across the long passage. This peculiarity has seemed worth dwelling upon, as, by reason of it, certain representations can be obtained which decidedly improve the effect of the play, and which are more or less impossible in European theatres, where approaches must be sudden, and a slow arrival or far-off action can be suggested only by distant sounds behind the stage from invisible supernumeraries, or by exaggerated expressions of expectation or alarm on the part of the actors upon the stage. To assist this conventionality, and to carry out still further the idea of the all-pervading nature of the scene in a Japanese theatre, strips of painted canvas, continuing the stage scenery, are often hung to the fronts of the upper boxes and galleries running all round the theatre.

An example of this may be given by reference to a portion of a favourite play, in which is represented the embarkation of a prince from his own castle town.

When the scene opens, a boat lies in the foreground, the floor of the stage being covered with painted canvas, representing a sandy beach in front and water touching the prow of the boat, and extending behind to the back of the stage. The prince and his suite having entered the boat, it is moved by means of the turntables of the stage, and at the same time the canvas representing the water is drawn forward, the sandy beach disappears, and the whole stage represents sea. Then, gradually along the sides of the upper boxes strips of canvas painted as water are drawn by cords, until at length on the further gallery-front facing the stage is seen the representation of the distant shore and castle town. This forms a fitting and expressive accompaniment to a long farewell soliloquy from the boat, the prince addressing his native home which he is leaving behind him. Thus a vivid reality is given to a change in the scene of action. The idea which it seems to suggest to the audience is, that they have in reality followed their hero to his next abode, leaving with him the last scene behind; and not that he has left them in the forsaken town to be transported mysteriously to the next scene of action. The two or three outermost rows of pit compartments slope considerably upwards on either side and at the back. Outside these seats are more spacious compartments running all round the theatre in a single row. These are the lower box seats, and at their front are occasional wooden posts supporting the floor of the upper tier above them. They are closed in, and entered by doors at the back. Some height above this upper tier of boxes, and just beneath the long low clearstory-windows, is a light and narrow gallery supported from the wall on brackets.

This gallery appears to be used only for attending to the windows, being approached by a ladder staircase, and being too frail to support a number of people. At the back of the boxes on either side are the two outer passages for communication with these box-seats, and corresponding passages above for the upper seats. One of the lower passages has a central screen dividing it longitudinally into two, the portion nearer the outside being used by those actors who wish to pass unnoticed from end to end of the theatre. The back portion of the pit opposite to the stage is covered by an upper gallery, on a level with the upper boxes, which extends back over the hall and rooms round the entrance. At the two extremities of this gallery are several small rooms for stores, and a sort of oratory, with a shrine, where it is usual for the proprietors and actors to supplicate success from some deity.

The appearance of the whole inside of the theatre is extremely plain, and devoid of finish or ornament. The large tie-beams of the roof, of heavy unsquared timber, are generally visible below a rough boarded ceiling. In some cases, the boarding is placed below the tie-beams, and is slightly ornamented with thin ribs. The heavy timbers of the roof contrast greatly with the frail posts and filling-in which form the walls of support. The fronts of the upper seats and the gallery front have sometimes a moulded hand-rail, with moulded or carved supports, but in other respects the interior has few embellishments, except in the scenery and hangings of the stage.

Considerable room is taken up by the stage, which occupies nearly the whole of the further end of the building. In addition, there are a few actors' dressing-rooms, bath-rooms, and small staircases leading to the principal rooms above. These upper rooms are larger, and occupy a portion of the space which below is given to the stage for the purpose of moving the scenery and working the turntables. The principal actors have separate dressing-rooms,—a hair-dresser, and quite a number of attendants; there is a larger room common to inferior actors. These rooms at the back of the stage are in some cases arranged in three low stories.

The staircases of approach from one floor to an other consist of two strings with treads, and no risers or handrail, placed to a steep slope.

The height of the stage opening is about 16 ft. from the stage floor, which is about 18 in. below the eye of those seated in the front of the pit. The platform of the stage, which has no inclination, comes well forward beyond the curtain opening, forming a wide passage in front communicating with the passages through the pit. The stage is provided with one or two concentric turn tables coming out to the front, and by the revolution of these the scene is sometimes quickly changed. The front scene will hide the scene behind, which is prepared in readiness, and then the whole is moved round.

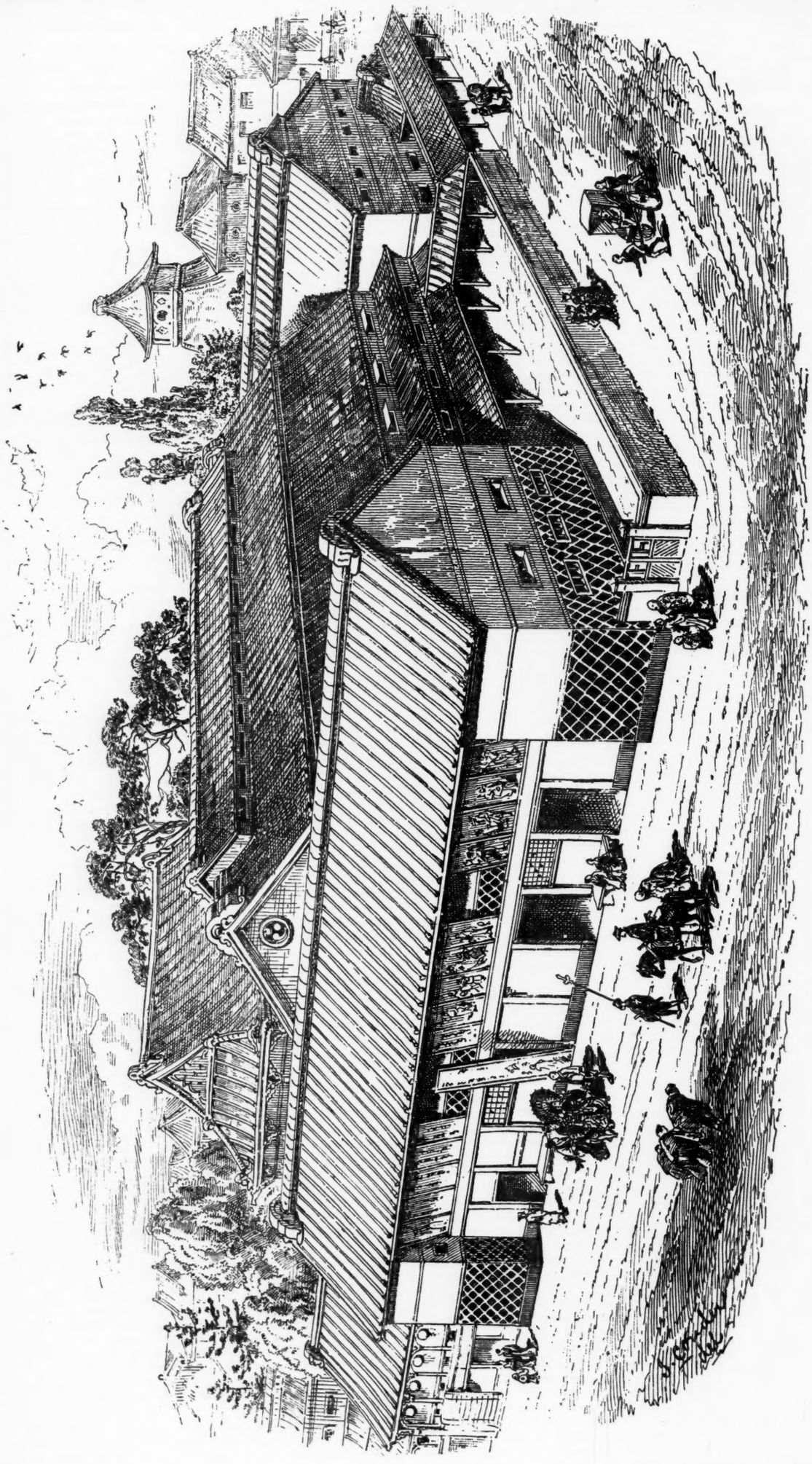
The representation of an interior scene upon the stage as we should make it, namely by converting the whole stage into a single room by means of side and back scenes, is never attempted, and is scarcely necessary on account of the facility of representing exterior and interior together. A Japanese house has low rooms, is often only of one story, and is mostly thrown entirely open in the front.

Even in the cold weather it is quite common to see the whole front of a house thrown quite open by removing or sliding back the light paper slides (*shojis*), of which nearly the whole front consists. In stormy weather, either cane blinds are hung outside of the paper slides, or else the whole is closed in by wooden shutters called *amados* (rain shutters) placed outside, keeping out light and air, a small quantity of light being admitted from some small side windows, or by a small portion in front not being quite shut in.

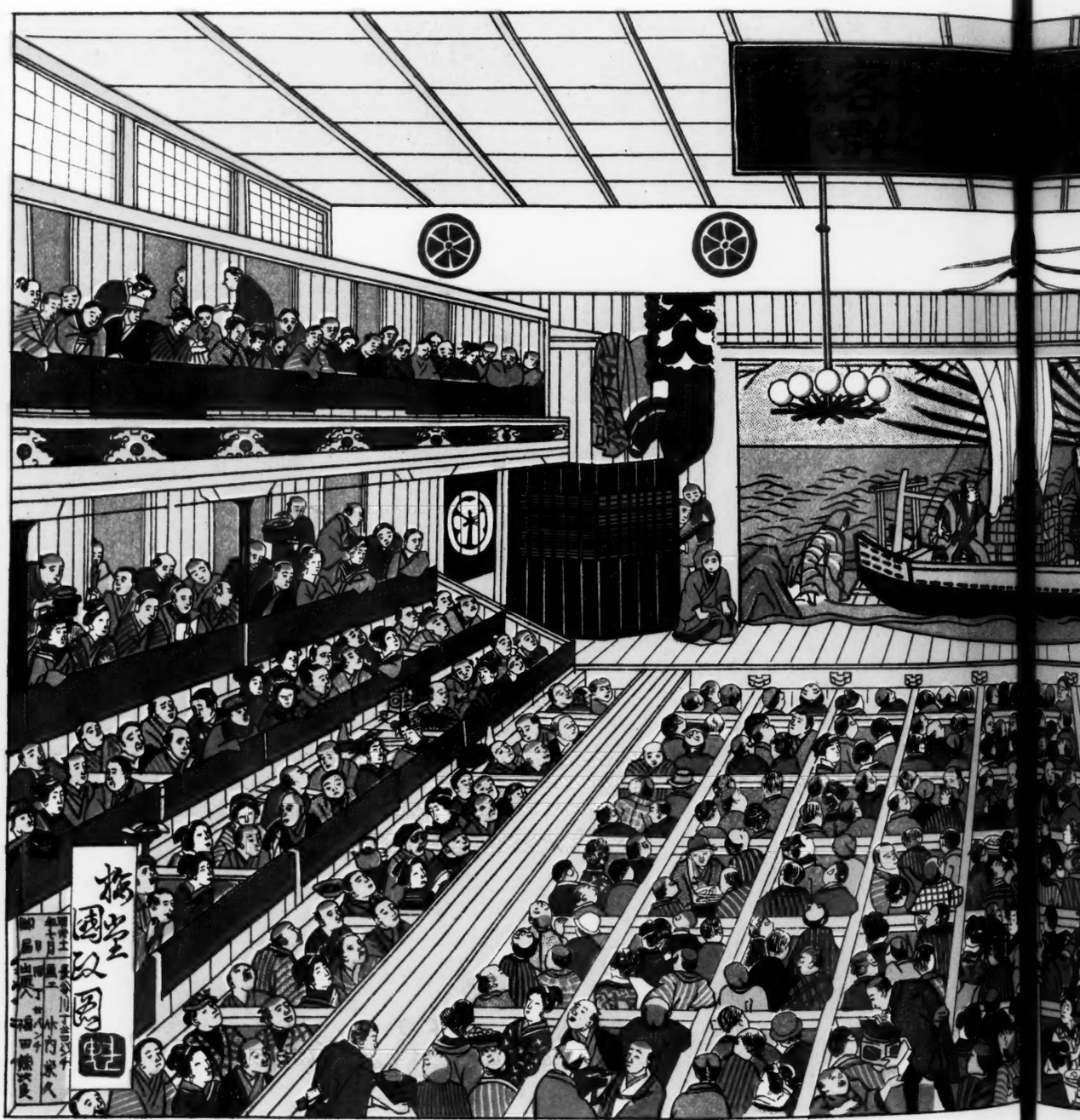
In palaces or the residences of men of rank, the rooms are grouped together and the block surrounded on all four sides by a wide boarded passage reached by a flight of wooden steps from the grounds. This passage is sometimes double the outer and narrower portion, having a balustrade corresponding to the handrail of the steps, and the inner portions bounded by posts filled in above with plaster, and supporting the eaves of the roof. The spaces between these posts are often entirely open, but they can be filled in with *shojis* and *amados*.

The internal posts of the passage forming the walls of the rooms can also be filled in or left open according to the weather, so that on a fine summer's day the whole interior can be thrown open, presenting a vista of matted rooms, and groups of posts.

It is such a view as this that is given to the audience in a theatre. The whole front or end of a house is represented on the stage from ground to ceiling line, by means of a light wooden construction somewhat smaller in scale than an actual building. The front thrown open will present to view the interior rooms in which the acting takes place, prolonged sometimes into the semblance of a vista of rooms, by means of painted scenes at the back.



JAPANESE THEATRE, CALLED SHINTOMIZA.



INTERIOR OF A JAPANESE THE... DU...

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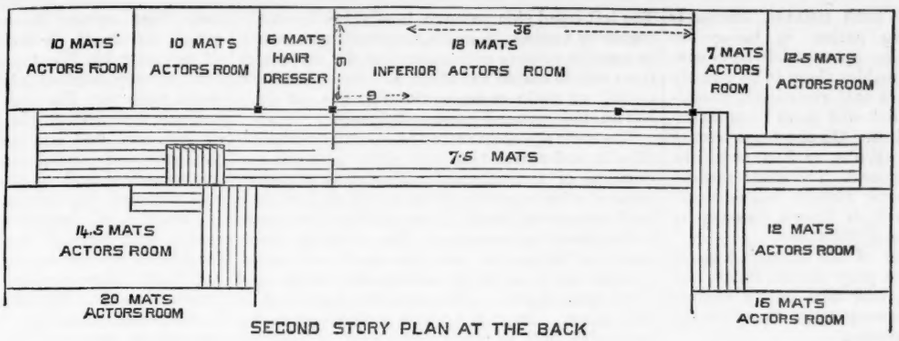
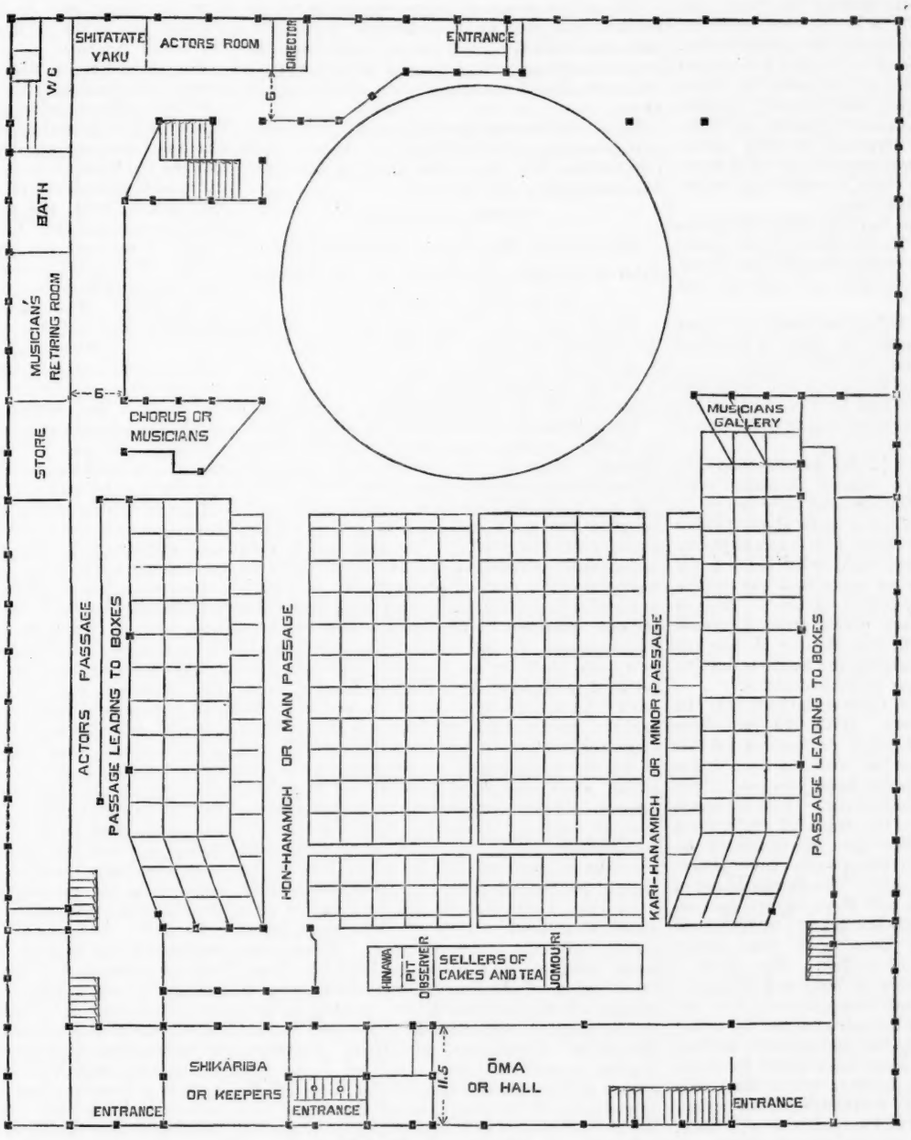
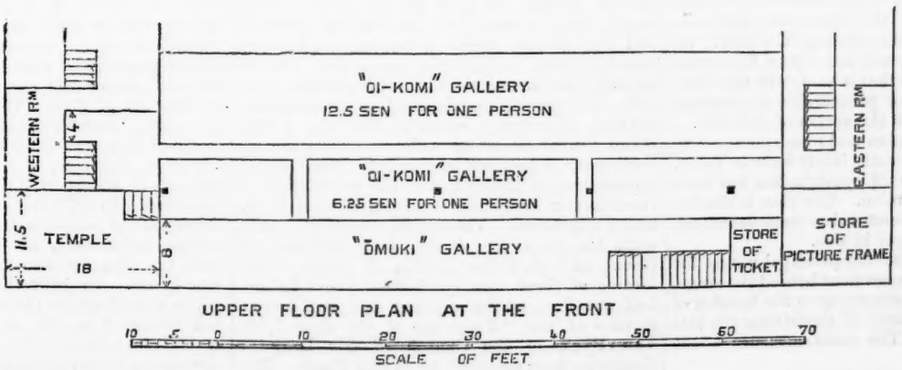


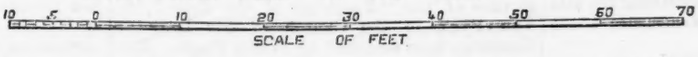
SECOND STORY PLAN AT THE BACK



GROUND PLAN



UPPER FLOOR PLAN AT THE FRONT



SHINTOMIZA THEATRE, TOKIO.——*Drawn by* M. OHARA, *Student*; JOSIAH CONDER, *direxit.*

The perspective of such painted scenes is mostly correct, erring rather in being too sudden. The turntables upon which such constructions are placed enables them to be quickly moved to the back by a half revolution, revealing the next scene, which will have been meanwhile prepared behind it. On the front part of the stage, side-scenes, shrubs, or flowers will be placed to form a foreground. The stage-curtain, generally having some simple conventional device in colour upon it, is drawn forward by attendants at the close of the scene.

At the left-hand side of the stage is a space for the orchestra, who play drums, flutes, and stringed instruments, and who partly explain the acting, and comment upon it, after the manner of the Greek chorus.

In addition to this orchestra there is a little gallery on the right-hand side of the stage, some 10 ft. from the ground, in which two musicians are seated, who accompany the performance. One of these men plays a stringed instrument (*samisen*), and the other accompanies the music at intervals with singing and intoned exclamations. They are sometimes visible to the audience, and sometimes screened by cane blinds, through which they can see without being seen; for it is necessary for them to watch the movement of actors upon the stage.

An ordinary theatre has no proper provision for artificial lighting, for the performance generally takes place only during the daytime, when the place is lighted by side and end windows just below the eaves.

In case of a play being prolonged till after dark, a miserably inefficient light is obtained by a row of candles placed in front of the stage; besides which a candle fixed to a rod is carried about by an attendant, and held in front of the particular actor who is speaking, in order better to illuminate him.

Another peculiarity is the presence on the stage of sundry boys dressed in black, with loose black caps, indicating that they are to be supposed invisible. They crouch about behind the actors to remove from the stage anything that is to be dispensed with, or to place a low seat or support under an actor who has to take up a position for any length of time. Most of the plays enacted are taken from Japanese history, and a visit to the theatre is now the best opportunity of realising the customs, habits, etiquette, and costumes of ancient times.

It is said that the representations may be relied upon as correct. With the profession of an actor, as with other professions in this country, the business has hitherto been hereditary, and instruction has been personally given or handed down in manuscript. This accounts to a great extent for the want of really good and exhaustive treatises upon the dramatic and other arts, in which the people have shown at times remarkable skill. The dramatic art of Japan may be said to hold the same comparison with our modern European drama, as Mediæval decorative painting does with the highly naturalistic picture of to-day. The story is told forcibly; the action of body and of feature is what we should call exaggerated; the impression of sorrow or despair is aided by weird doleful music, and by the sympathetic wailing of the chorus; and sometimes acute feminine grief is pictured by a dance in which the hands are wrung and the body writhes in painful action, accompanied by sobs and snatches of wild song.

There are dances expressive of grace and beauty, of humour, or of grief; unnatural perhaps, but unmistakably highly effective in drawing the sympathy of the spectators and conventionally assisting the effect of the play. So forcible is the effect produced that a foreigner, unable to follow much that is said, will find himself worked into sad or pleasurable excitement fully in sympathy with the action of the play.

The accompanying plan and rough perspective sketch represents a theatre lately built in Tokio, in which the old style of construction has been somewhat improved upon. The plan is similar to the ordinary form, such as has been described, though somewhat larger in size.

It will be seen that the principal rooms for actors are upon the upper floor behind the stage, and they are figured according to the number of mats,—the ordinary way of describing the size of a room in Japan. The mats measure about 3 ft. by 6 ft.

The boarded passages between the rooms are shown by fine parallel lines indicating floor-board joints. It will be observed that a large open space is reserved for the stage, and that the space allotted to the orchestra is very small The left-hand side passage is divided down the centre by a screen, in order, as already mentioned, to provide private communication for the actors from end to end of the theatre. The "*hon hana michi*," or main passage, through the pit seats has an underground passage below it.

The walls are constructed of wooden quartering filled in and covered on both sides with plaster. Portions of the external walls are, in addition, covered with large black tiles, laid flat with a bold cement roll at the joints, giving these parts a chequered appearance. The external woodwork is lacquered, and the roofs are ornamented with a heavy ornamental ridge and terra cotta finials. The windows are filled in with glass. Iron is used to a small extent on the inside, both as ties in the roof and also in the form of iron posts to support the galleries.

One of the greatest improvements is the introduction of gas into the building. Foot-lights and top lights are fixed to the stage, and two large chandeliers hang from the ceiling over the centre of the theatre, as shown in the interior view.

This enables the proprietors to give night performances, which hitherto have been next to impossible. This theatre is intended to accommodate about 2,000 Japanese.

TECHNICAL TRAINING IN BELGIUM: THE SCHOOLS OF ST. LUKE AT GHENT.

ARCHITECTURAL ASSOCIATION.

AT the ordinary fortnightly meeting of this Association, on Friday, the 28th ult., Mr. H. L. Florence, president, in the chair,

Mr. W. H. James Weale read the following paper on "The Schools of St. Luke at Ghent":

My acquaintance with Belgium extends back to 1849. At that time there was no public interest whatever in architectural matters. Whenever any new building was erected, or any old one restored, the local papers uniformly lavished the most extravagant praise on the authors of the work. The only point that occasionally excited remarks of a different nature was the cost of these works. I think I am right in saying that from 1849 until 1858 the only criticism of Belgian architecture that had appeared in the country was contained in two pamphlets by an English architect, then resident in Bruges, Mr. Thomas Harper King, with whose "Study Book of Mediæval Architecture" many of you are doubtless acquainted; these related more especially to the new Church of St. Mary Magdalene at Bruges, the plans of which were considerably modified in consequence. In his translation, or rather adaptation, of Pugin's "Contrasts," to which he made considerable additions, were some very just remarks on modern Belgian work, but at the time of publication these excited little attention.

In 1858 I commenced the publication of a series of critical articles on the restoration of public buildings of the country. These drew some attention, and when, in 1860, the Royal Commission of Monuments was reorganised, I, though a foreigner who had but recently settled in the country, was named a member of the Provincial Committee of West Flanders. Hoping to awaken public attention to the real nature of the so-called restorations, I seized the opportunity of the first general meeting of the Royal Commission at Brussels in 1861 to read a memoir on the Restoration of the Public Monuments of the country. This memoir raised a regular storm, not only in the architectural world, but in several of the leading journals, and for several weeks I carried on a paper war with some half a dozen opponents. Of the seventy-two members of the Commission, two only, like myself members of provincial committees, thoroughly espoused the line I had taken up, whilst about a dozen more gave me their more or less partial support. The Central Commission of Brussels and the entire body of Government architects became, of course, my bitter opponents. The two members who were with me were the Baron John Bethune, of Ghent, and M. Jules Helbig, of Liège. The former of these two gentlemen, years before, had one day, whilst copying the well-known picture of the "Elevation of the Cross," by Van Dyck, in the Church of our Lady at Courtray, been accosted by Welby Pugin. The young Bethune became his cicerone in the church and town, listened, at first, with some astonishment to the English architect's remarks and criticisms, the point of which awoke a sympathetic echo in his mind, and between the two there sprang up an intimate friendship, which led to M. Bethune's taking up the idea of devoting his life to art. He came over to this country, studied glass-painting and metal-work with the Hardmans, and furniture and architecture with Pugin. He became the Pugin of Belgium, and has for many years not only designed and carried out a number of buildings, ecclesiastical and domestic, but has designed and directed the execution of a vast number of articles of furniture, in stone, wood, and metal, and himself designed and executed a large amount of stained glass. There is no living architect in Europe whose work resembles Pugin's so much as his. My other adherent, M. Helbig, is an artist, who, after studying painting in the Düsseldorf Academy, has gradually taken more and more to study the Mediæval painting of the Low Countries, and to imitate with growing success the style of the best artists of the fourteenth century.

For three people, who met once a year, to carry on a struggle with a powerful body like the Central Commission, and at the same time to contend with local opposition with any great chance of success, was out of the question. At last we determined to try and form a society composed exclusively of Mediævalists, and in September, 1863, we founded the Guild of St. Thomas and St. Luke, for the study of Christian art and the propagation of its principles. This guild meets every year in some town either in Belgium or one of the neighbouring countries. The sessions last a week. The mornings are devoted to the examination of the monuments and works of art of the locality and neighbourhood, the evenings to reading papers and discussions, partly on the buildings and objects examined in the morning, and partly on some particular art question proposed at the previous meeting. It was by members of the Guild that the great Loan Exhibition of Ecclesiastical Art was got up and carried out at Mechlin, in 1864, and which, owing to its taking place in connexion with the Catholic Congress, did more than anything to propagate a taste for Mediæval art among both clergy and laity, the chronological arrangement of the specimens of church vessels and furniture there exhibited having been adopted with the especial view of showing the superiority of Mediæval art.

The smaller loan exhibition of Bruges, in 1867, was also got up by the Guild, and this and the annual meetings in different towns brought recruits to our cause. Our views had gained ground; but those of our number who were architects or designers had the greatest difficulty in getting their ideas carried out. Designs put into other hands were modernised and classicised in their execution, and we felt that this would continue to be the case as long as art-workmen received their education in the academies, all carried on according to the Government system.

In 1864 one of our guild members, who, as a brother of the Society of St. Vincent of Paul, took an active part in the direction of a patronage for young workmen, found two boys who very much wished to learn drawing. The idea struck him that he might introduce this branch of instruction with good result; and having obtained the assent of the committee, he commenced a drawing-class, for which he himself prepared the models. Other boys soon joined it, and the class increased little by little. Those members of the guild who resided in Ghent were naturally interested in the work, and promoted it, some by pecuniary aid, others by taking part in teaching. In 1869 the class, which had greatly increased, was removed from the patronage, and constituted a separate work, but still under the auspices of the Society of St. Vincent of Paul. The regular direction of the class, henceforward known as the School of St. Luke, was confided to the Brothers of Christian Doctrine, and in 1870, when it was opened, in rooms of its own, 110 pupils were admitted. In 1871 the rooms were enlarged, a library and a collection both of casts and antiquities commenced, whilst, in addition to the class teaching, a course of lectures on symbolism was given. In 1872 the average number of pupils attending the classes held every evening had increased to 160, and the attendance at a special class, held on Sundays, for those whose occupation hindered them from frequenting the evening school, to 70. A series of lectures on construction were given this year by M. Arthur Verhaegen, who, after having passed his examination as civil engineer before the Government jury with the highest distinction, had

adopted the profession of architect. In 1875 the buildings now occupied by the school were commenced. They are of red brick, in the Flemish Domestic style of the fifteenth century, and were deigned by pupils of the school. The interior is adorned with a simple polychromatic decoration. They were opened in 1876, in which year the evening attendance rose to 200, and the Sunday attendance to 100. The art collections received a very valuable addition in the shape of a large collection of drawings of articles of Mediæval furniture bequeathed to the school by one of its earliest founders and friends, M. Florimond van den Poele, designer of the Convent of Vive, near Bruges, and of the manor-house of Schelderode, whose special talent for designing metalwork had led us to expect great things from him, when his useful career was closed by death, at the age of forty-three. In 1877 the new buildings were enlarged. There are now in the evening school 350 boys, and in the Sunday class 120.

In 1878 a School of St. Luke was commenced at Antwerp by M. Belpaire, engineer; M. Hendrickx, a pupil of Leys, and the author of the fine series of the "Stations of the Cross" in the Cathedral and in the Church of St. Joseph at Antwerp; M. Baeckelmans, architect of several remarkable churches; M. van Ryswyck, goldsmith and metal-worker,—all members of our guild. But this school is not under the care of the Brothers of Christian Doctrine.

Another school was established at Tournay under the management of brothers trained at Ghent, aided by two members of our guild,—M. H. Desclée and M. Cloquet, and a fourth at Lille.

I hope that before the close of the present year a fifth will be in working order at Liège. I should have much liked to have been able to put before you specimens of the pupils' work during each year of the course, which occupies seven years. This, however, was not possible, but I have here the set of models,—fifty in number, which form the first or elementary series. The method adopted differs from that generally used in Belgium. The objects are in white outline on a black ground, easily seen at a distance, and intended to be reproduced on a slate or black-board,—a better system for beginners than that of drawing on white paper. The object is to form the eye of the pupil as quickly and as easily as possible by enabling him to see at once the defects in his work, so that he may himself try and improve his copy without waiting for the master to correct it.

The classes in the school at Ghent are now complete; they include architectural drawing and construction, ornamental drawing and carving, figure drawing and painting, the complete course in each class extending over seven years. As I have before said, the regular daily direction is confided to the Brothers of Christian Doctrine, who are aided by members of the guild, the general supervisor and director being its president, M. John Bethune.

I now wish to call attention to another institution carried on in a similar spirit, but the special aim of which is to form art-workmen. About a mile from the town of Ghent, on the road to Courtray, in a small village named Maltebrugge, is an orphanage for boys, built and endowed by a wealthy cotton-manufacturer of Ghent, M. Joseph de Hemptinne. It is a large quadrangular brick building, erected from the designs of M. John Bethune, with an elegant and spacious chapel, the chancel of which is richly decorated. The fittings and furniture throughout the entire establishment are in the Mediæval Flemish style. Economy has been closely studied, and everything, with the one exception of the altar and chancel of the chapel, is extremely simple, but far more solid than the general run of fittings in institutions of this class; yet, owing to the careful attention given to every detail, the general effect is extremely good, and even casual observers, after having gone through the buildings, come away impressed with the grandeur of the general effect. The orphanage contains over 300 boys, almost all sons of ordinary labourers. It is under the direction of Brothers of Christian Doctrine. The education is, of course, thoroughly religious, and not at all in accordance with popular current ideas of the present day. Those boys who show no aptitude for art are, in addition to reading, writing, cyphering, and elementary geography, taught gardening, tailoring, shoemaking, or some other manual labour. But all those who show any disposition, and the proportion is large, are trained to become art-workmen. At the age of from twelve to fourteen very many of them are able to draw from Nature, and show an amount of feeling that is quite remarkable at so early an age. Instead of engaging skilled masters to teach the boys, which would have been expensive, and probably have led to no satisfactory result, a far better system was adopted. Two brothers, of the name of Blanchaert, one a stone carver, the other a carpenter and wood carver, were indemnified by M. de Hemptinne for removing their workshops from Heusden to the immediate proximity of the orphanage. Blanchaert, the stone-carver, is a well-informed but quaintly simple peasant. Thanks to my late regretted friend, Sir John Sutton, Blanchaert in his younger days travelled over great part of Europe studying the choicest specimens of Mediæval sculpture. He was one of the first to join our guild. In his workshop are now some fifty boys and young men engaged in carving statues, reredoses, pulpits, fonts, &c. In his brother's workshop are some fifty more, who make every description of furniture, from the simplest stool to the most elaborately-carved credence or cabinet. The plan pursued has turned out advantageously to all concerned. The masters, who formerly could not depend on the regular attendance of their men,—on Mondays, for instance,—and were affected by strikes, can count on regular attendance on every working day, whilst to the boys the advantage of working for a long number of years under the same direction is immense. In other ways, too, they derive special benefit. The wages they earn are paid to the institution, a certain sum being deducted for their keep, as also a percentage for buying off those who may have the misfortune to be drawn as conscripts for the army; the remainder accumulates, and is given to them on leaving the orphanage when they are grown up.

There is also a workshop of decorative painting under the direction of M. Ad. Bressers. A foundry for works in brass and other metals has now been at work three years. Here lecterns, tabernacle doors, candlesticks, and other articles in latten, are turned out in all respects equal to old work. A bookbinder's shop has also been established, and a smith's forge for works in wrought iron is in contemplation. The whole colony leaves a decidedly favourable impression on the mind of the visitor, carrying him back in thought to the life and manners of the good old times of the Middle Ages.

These schools have been started and carried on by men who believe that exclusivism,—that is to say, the exclusive study of Christian models,—is the only way to arrive at a regeneration of art. And so Classical and Renaissance, or, as we prefer to call them, Pagan and Paganised Christian art, are rigidly excluded. Not only that, but in the schools the attention of the pupils is exclusively directed to Christian art of the north-western part of the Continent.

All ancient art was the natural outcome of the people, and by an attentive study and analysis of its characteristics we can arrive at a clear idea of their religion, morals, and manners. Indian and Egyptian, Greek and Roman art, are all alike in this respect. When Christianity permeated and changed society, there gradually grew up a new art which went on developing itself in a regular and logical manner, until its progress was arrested by the so-called Renaissance. These schools aim at reviving the traditions of Christian art, and for this reason exclude all that is antagonistic. For although in classical models there is doubtless much grandeur and a great deal of beauty, yet even in the best Greek art you will seek in vain for a single type of the two fundamental virtues of regenerated Christian society,—Humility and Chastity. Where faith and morals are wanting there can be no hope of ever attaining the degree of perfection which our ancestors reached in the Middle Ages, far less of surpassing them; for art, according to the definition of the great St. Thomas Aquinas, is nought else but the manifestation of beauty, and beauty is the splendour of the glory of God revealed in His creatures. Christian artists should be guided by this teaching, which explains the antagonism between the two schools, the Christian school which draws men towards the supernatural, towards their Creator; and the realistic school which drags them down towards creatures. The one seeks for beauty in Nature, and tries to reproduce its works with the greatest perfection; the other rises higher, and, looking to the source of eternal beauty, tries to derive some rays of glory from it.

To become Christian artists we must commence by being thoroughly Christian. In the carrying out of this first principle lies the secret of the vigour, strength, and influence of the schools of St. Luke. Many eyes are now fixed and many hopes founded on them, which, I feel sure, will not be disappointed. I began by saying that, twenty years ago, Belgium was, in art matters, behind England in every respect. I will end by saying that, in one respect at least, she is now ahead, in having schools founded on true principles.

TEWKESBURY ABBEY RESTORATION.

In view of the re-opening of Tewkesbury Abbey in September next, a public meeting was held in the library of Lambeth Palace on Friday afternoon, March 28, with the object of calling attention to the progress and present position of the restoration of the abbey, and to present a report of the work accomplished since the meeting held at Lambeth in March, 1877.

The chair was taken by the Right Hon. Sir Michael Hicks-Beach, Secretary of State for the Colonies, who, in opening the proceedings, said that the restoration of Tewkesbury Abbey was a work which should specially commend itself to the country at large. Parish churches of an ordinary kind, if they needed restoration, could be restored, as a rule, by the contributions of those who were locally interested, as they were not generally, either in character or size, buildings beyond the power of the parish and the neighbourhood to deal with. Our cathedrals, on the other hand, known as they were, far and wide, as national monuments, were yet felt to be in a peculiar sense the property of the county or diocese in which they were situate. The case of Tewkesbury Abbey Church, however, was dissimilar to either of the cases to which he had referred. While it was to a great extent beyond the needs of the town of Tewkesbury, it did not command such wide interest, except, perhaps, historically, as a cathedral, and in effecting its restoration it was necessary to appeal to the country at large. He did not wish to be misunderstood in using the word "restoration." He was one of those who were conservative in such matters. The venerable building should, in the first place, be kept in good repair; in the second place, any disfigurements which had been imposed upon it should be removed; at the same time, it should be the object of the restorers not so much to carry out their own fancies as to reverently restore what they found. That, as he took it, was the right view of restoration, and it was to be greatly regretted, he thought, that that view had been departed from in some so-called "restorations" throughout England. In the present restoration of Tewkesbury Abbey, however, he believed that no fault of the kind was likely to be found. He believed that the work was safe in the hands of those with whom it was placed: that their desire was to act in the spirit he had described, and to hand down the building to future ages in a proper and satisfactory condition as a monument of the piety and skill of our ancestors.

The vice-chairman of the Restoration Committee, the Rev. Hemming Robeson, vicar of Tewkesbury, presented a report showing what had been done.

Earl Beauchamp moved the first resolution,—

"That this meeting, having heard the report of the Restoration Committee, detailing the works which have been carried out during the past two years, desires to express its entire satisfaction with the progress which has been made, and cordially invites the co-operation and aid of all who are interested in a work of such great and national importance as the careful and judicious restoration of the largest existing abbey church in this county."

Lord Sudeley seconded the resolution, which was carried unanimously.

Mr. J. Reginald Yorke, M.P., moved:—

"That the names of the following gentlemen be added to the National Committee, and that a London Sub-committee, for the purpose of collecting the funds required for the completion of the works, be formed, to consist of,—

(*Names to be added to National Committee*):—Rev. Canon Barry, Mr. Thomas Blashill, Mr. A. W. Blomfield, Mr. H. C. Coote, Mr. Edmund B. Ferrey, Mr. J. F. France, F.S.A., Mr. S. W. Kershaw, M.A., Mr. B. A. Paice, Mr. R. B. Prosser, Mr. J. P. Seddon, and Mr. W. White, F.S.A.

(*London Sub-committee*):—The Bishop of Gloucester and Bristol, Earl Beauchamp, Lord Sudeley, Sir Michael Hicks-Beach, Sir Edmund Lechmere, Mr. Beresford-Hope, Mr. J. T. Agg-Gardner, M.P., Mr. W. E. Price, M.P., Mr. J. Reginald Yorke, M.P., Mr. F. Ouvry, Rev. Canon Barry, Mr. Thos. Blashill, Mr. A. W. Blomfield, Mr.

H. C. Cotte, Mr. E. B. Ferrey, Mr. J. F. France, Mr. S. W. Kershaw, M.A., Mr. B. A. Paice, Mr. R. B. Prosser, Mr. J. P. Seddon, and Mr. W. White."

This resolution, having been seconded by the Rev. J. H. Blunt, F.S.A., was also carried.

Mr. J. Oldrid Scott then read a paper, which we print.

TEWKESBURY ABBEY.*

I CANNOT proceed without first expressing my high sense of the privilege I feel it to be connected with the restoration of such a glorious building as the Abbey of Tewkesbury. It is, indeed, a spirit-stirring work, and my best acknowledgments are due to the committee for the confidence they have placed in me. It is my earnest intention to pursue the course laid down so clearly by my father during the years he was engaged on the work, acting, to the best of my ability, in the same spirit of true conservatism by which he was always inspired, and which, in this case, is happily shared in to the fullest extent by the committee themselves.

The abbey is built mainly in two styles of architecture,—Norman, of a very plain kind, and a beautiful variety of Middle Decorated. The Norman abbey was founded early in the twelfth century, and consisted of a long nave with aisles, transepts united by a grand central tower, and a choir also with aisles, terminating in an apse, surrounded by an ambulatory, from which, no doubt, projected chapels, as they did also from the eastern walls of the transepts.

The two chief characteristics externally (both of which still remain) must have been the grand central tower, richly arcaded, and surmounted, as it then was, by a wooden spire; and, what must have given, as it does now, especial individuality, the remarkable western front, the central part of which is occupied by one vast arch extending from the ground to the roof, recessed in seven bold orders. This was, no doubt originally filled in with a number of Norman windows, but of these we have now no record. This feature is still the one which distinguishes Tewkesbury Abbey from all others, and the most casual observer cannot fail to be struck with its peculiarity and boldness. Its present appearance is much injured by the loss of the gable which rose above it till the seventeenth century, when all the high roofs were unhappily swept away, to the great loss of the building. Internally, the building, which was in these early days exceedingly plain, had a curious feature, which it possessed in common with Gloucester and Pershore, of remarkably tall columns and arches in the nave, contrasting with very low ones in the choir.

The building continued as its Norman founders left it for some 200 years, when, early in the fourteenth century an astonishing change took place.

In the nave, this was confined to the insertion of tracery windows throughout, and the substitution of stone groining for the flat or coved wooden ceiling, the same being done in the transepts; but in the choir a far greater alteration was effected. The ambulatory was first taken down, and rebuilt somewhat further out, and from it were projected the most beautiful series of chapels to be found in this country, except, indeed, at Westminster. All of these now remain, with the exception of the lady-chapel, which was on a far larger scale than the others, and which, from the precious fragment of its west end still existing, must have been a building of extreme beauty. The date of these works must have been early in the century. Immediately afterwards the whole of the choir was pulled down, the Norman columns only being left, and rebuilt in the richest variety of the prevailing style. A lofty clear-story was erected, consisting of seven noble windows of the finest design, which are still filled with their original stained glass. The groining, too, was of the most elaborate description, and the whole of this part of the building, within and without, is of almost unequalled elegance and picturesque beauty. The new walls were of the same height as the old ones; but the roof was arranged slightly lower than before, so as to allow of the addition of the beautiful parapet, which is now unhappily almost ready to crumble away. At this time, and subsequently, the eastern part of the building was further enriched by a magnificent series of chantry chapels and monuments. The spectator is bewildered with their number and variety. These alone are sufficient to place Tewkesbury in the very first rank among our great churches in point of historical interest.

Two more peculiarities relating to the interior, which distinguish Tewkesbury as it has come down to us, remain to be mentioned. The marked contrast between the noble simplicity of the nave and the exceeding richness of the eastern portions is the first. This is very striking, and the skill with which the two are brought into harmony by groining of a somewhat similar character being continued throughout the whole length is worthy of especial observation. The other feature to which I allude is one which has always struck me most forcibly. It is the very unusual proportions of the interior. No building of this nature with which I am acquainted gives such a remarkable impression of breadth and expanse. This is, no doubt due to the height being in such a small ratio to the width. But it is the *breadth* of the building which strikes the observer, and certainly not its want of elevation.

Although the abbey belongs, as I have observed, mainly to two periods only, yet the shortest notice would be imperfect if nothing were said of the exquisite work belonging to the thirteenth century adjoining the north transept. There was, at first, a Norman apsidal chapel here, which was rebuilt in the thirteenth and again in the fourteenth century; but just beyond this, in an unusual position, namely, at the extreme north-east angle of the transept, there still remains a most beautiful little building, dating from the commencement of the Early English period, though with subsequent alterations. This can be shown to have formed the chancel of the small church, the nave of which ran across the north front of the transept. It has been conjectured, with much probability, that it was erected to form a lady chapel, for the use of the parishioners. The design of its nave can still be traced with some accuracy, and it must have been a feature almost unique, and of the greatest beauty. Should its restoration ever become possible, it would be, indeed, a charming addition to the abbey, and one, I cannot doubt, of great utility.

Having now said as much as seems to be required about the abbey itself, I will proceed to describe the works we have in hand, and those which are proposed, taking them in the order adopted in the report of the committee.

The whole of the nave has been cleared of the modern plaster and whitewash which disfigured it, and all defects in the stonework have been made good. This refers to the interior. What is of special interest here, is the treatment of the vaulted ceiling; but as this is spoken of in detail by Mr. Gambier Parry, I will touch on it very briefly. The bosses of the groining when first uncovered showed signs, though not very distinctly, of their ancient decoration, and it was at the time determined to restore them. The result, however, was unsuccessful, and the treatment was stopped after two bays had been so dealt with. The carving of the bosses throughout this roof is of the highest value and interest, the subjects of the central range consisting of scenes from the life of our Lord, while the two side rows are occupied with angels bearing censers, or playing upon musical instruments. Nothing can exceed the artistic feeling displayed in these sculptured bosses; but, from their being in most cases hardly more than sketches, it quickly appeared that any treatment of them in full colour tended only to obscure their design, and to emphasise their incompleteness. So much was this felt, that for a considerable time it was the opinion of Mr. Gambier Parry, who had given the matter much consideration, as it was my own, that it would be best to attempt no decoration whatever. The greater part of the ceiling was, therefore, left plain; but the effect from below was by no means satisfactory, and at length Mr. Parry proposed a method of treatment which he has now carried out in a portion of the groining. I have seen this within the last few days, and for my own part I desire to express my great admiration for the skill and judgment shown. Such is, also, the unanimous opinion of the committee, and it has been decided that the treatment shall be continued throughout the whole of the nave.

The floors of the transepts, ambulatories, and chapels have been made thoroughly good in all respects.

The Decorated chapel, east of the north transept, is in course of careful reparation, the cost of which is being borne by the Provincial Grand Lodge of the Freemasons of Gloucestershire. There are also some pressing repairs being carried out in the Early English chapel, to the north of this, to which I have alluded, but not to the extent of anything like complete restoration.

The next item mentioned in the report is a comprehensive one. It alludes to the choir stalls and screens, the font, pulpit, &c. Of the ancient stalls, a sufficient number remain to complete the back row on both sides of the new arrangement. In addition to these, considerable portions of the stall backs, or screens which rose above them, are also in existence. These are interesting works of the fourteenth century, and were probably executed just after the completion of the choir. It has been decided to restore the stalls to their original position beneath the tower, and to erect above them these ancient screens. Unfortunately, only a sufficient length of the latter remains for the north side, and this alone has been ordered by the committee, the funds not being sufficient for the new screen required on the south side. Eventually it will, of course, be necessary to add the second row of seats for the choir boys, as well as book-rests, but at present this part of the arrangement must be temporary, the total expenditure needed for the complete re-arrangement of the choir amounting to between 700*l.* and 800*l.*, of which the committee are only able to undertake a very small portion at present.

As regards the *choir screen*, various proposals have been made, but the only designs prepared have been for a low enclosure of ornamental character. A wooden model of the most recent design has been made so that its effect may be well considered. It is, however, my own opinion that this church should eventually possess a high choir-screen, of very open design, but sufficiently elaborate to accord with the ancient fittings. I sincerely hope that this may some day be possible.

We come now to the font, of which a drawing is exhibited. It at present consists of a base and shaft of Decorated date, carrying a bowl of very mean appearance, probably belonging to the eighteenth century. A new bowl has been designed, agreeing in style with the ancient part. It will be in Purbeck or some similar marble. The font, thus completed, is to be surmounted by a lofty wooden cover of tabernacle work, the design of which has been founded on an ancient fragment of fourteenth-century woodwork remaining in the abbey. Great pains have been taken over the design, which is now being carried out by Mr. Collins, the contractor for the Restoration works. I am glad to say that this font canopy has called forth a rivalry in generosity, two donors having been willing to bear its cost.

With respect to the pulpit, I have only to say that one is very much needed, and that it is essential that it should be as far as possible worthy of this grand building.

The report next refers to the reparation of the seven windows of the choir clearstory, as well as the restoration, should it be thought desirable, of the sedilia and the choir or chantry chapels. As regards these chapels, it appears to me that it would be, on the whole, the wisest course to leave them without anything like complete restoration. Some slight repairs are actually required and should be undertaken, but nothing beyond this appears to me desirable. The case of the sedilia is different, these being a necessary part of the furniture of the church. Happily, the greater portion remains. The design is most noble and characteristic, and I think it would be well to complete them. The restoration of the clearstory windows really forms a part of the external reparation of the stonework. Happily, in proportion to the size of the building, not very much work of this nature is necessary, nor do I consider it would be wise to do more than is absolutely wanted. One work connected with this should be mentioned; namely, the roof of the south aisle of the nave, which is in a very bad state of repair and needs retiling, as well as other repairs.

The last item mentioned is the reredos. No resolution has been come to by the committee on this subject, nor has it been formally considered by them. After one of my visits to Tewkesbury, I prepared a sketch-design for this purpose, but entirely upon my own motion, and a drawing founded on this is in the room. My object, however, has been mainly to elicit opinions on this subject. I cannot help feeling that, considering how the choir is flanked by a noble series of chapels and towering monuments,

* By Mr. J. Oldrid Scott, read at the Lambeth Palace Meeting, as already mentioned.

it can never look complete until its eastern extremity is occupied by a reredos as dignified as any of them, though it would indeed be vain to hope to equal them in beauty. The drawing exhibited doubtless needs more consideration, and it will be especially necessary to give any reredos erected here a considerable amount of local character, introducing among its sculptures figures of those eminent personages with whom the history of the abbey is so intimately connected.

A few other points need alluding to. The north porch is now being carefully repaired, and is nearly finished, and I am glad to say that the very sumptuous iron gates which have stood in connexion with it for the last 150 years will be retained, though their level will be lowered with the ground. Some further expenditure will be necessary here in the provision of new doors, but this has not yet been decided upon.

The floor of the nave has now been entirely lowered to its ancient level with a very good effect,—the step which we discovered to have marked the position of the ancient rood-screen which separated the conventual from the parish church being restored.

Finally, a few words require to be said about the organ. The position finally decided on for it, as stated in the report, is beneath the north arch of the central tower, above the screen forming the back of the stalls,—a drawing of it in connexion with them is shown. The fine old case will be strictly preserved,—a very small addition being made to its lower part to adapt it to its new position. It is of great value and beauty, and, from its details, must be one of the earliest in the country.

Such then is an account,—I fear a very dull one,—of the works either in hand or contemplated. All are of importance, and indeed, of pressing necessity, but the means at the disposal of the committee compel them at present to postpone a considerable proportion of them. It is greatly to be hoped that the publicity now being given to this good work may lead to substantial help being received.

THE STUDY OF ECCLESIOLOGY.

ST. PAUL'S ECCLESIOLOGICAL SOCIETY.

The inaugural meeting of this Society was held on Tuesday evening last, in the Chapter-house, St. Paul's Churchyard. There was a large attendance. The chair was taken by the Rev. H. C. Shuttleworth, M.A., chairman of the council, who said that it was a "hopeful" omen that the Society had been able to induce Mr. Beresford-Hope, who was a leading member of the old Ecclesiological Society, to give the inaugural lecture; another "hopeful" omen was that the initials of the Society were S.P.E.S. These two favourable omens would, he trusted, counterbalance the somewhat unfavourable circumstance that the date of the opening meeting of the Society was obliged to be fixed for the First of April.

Mr. Beresford Hope then proceeded to give an address on "The Study of Ecclesiology." He observed that as an old labourer in the work of the old Ecclesiological Society, he felt it to be a great honour to be invited to take part in planting what he hoped and believed would prove to be a vigorous young offshoot from the parent tree. It was just forty years ago, within a few days, that two undergraduates called upon their college tutor at Cambridge, full of an idea which had struck them of founding a society for the study of Gothic architecture and church art. The tutor, kindly sympathetic in all things, accepted his pupils' suggestion, tempered, no doubt, with a timely warning that the pursuit of such studies was not the best way to obtain good places in the University triposes. That warning was not altogether heeded, and the consequence was that there were martyrs to ecclesiological study in the Cambridge triposes of those days. Of the two undergraduates referred to, one,—John Mason Neale,—had now departed this life, the other,—the Rev. Benjamin Webb, vicar of All Saints', Margaret-street,—was happily still spared to us. They were joined in their enterprise by such men as Paley, the great Hellenist, and the late Archdeacon Freeman, of Exeter. In course of time the Society relinquished its first and somewhat incongruous name, "The Cambridge Camden Society," and became "The Ecclesiological Society," and with its less restrictive title it was enabled to enlist the co-operation of many distinguished Oxford men, among whom was the late Sir Stephen Glynne. Now, the members of the St. Paul's Ecclesiological Society should ask themselves what they proposed to do. Did they propose to visit a certain number of churches, unintelligently, though, perhaps, agreeably? He was sure they did not, and that he spoke for them all when he said that their purpose was to take up in earnest the study of the science of ecclesiology, and maintain and develop it. Now, what was the science of ecclesiology? It was the science of worship, carried out in all its material developments. Ecclesiology was ceremonialism, and a good deal besides. It embraced within its scope the buildings which were erected for worship, and all the accessories and adjuncts pertaining to such buildings, as well as the service of worship itself. It was the vehicle whereby many arts were made subservient to one great end, and the greatness of the end demanded the employment of the highest art, whether in architecture, painting, sculpture, or decoration. The science of ecclesiology, too, included one of the most recondite branches of archæology, viz., liturgiology. It also included the study of church music, hymnody, organs, &c. He was very glad to be informed that, at the outset, it was proposed by the council of the Society to commence by directing the attention of the members to the architectural aspects of the great programme which they had before them. Other branches of study would follow in due course. But great caution would have to be exercised in so controlling the current of study as not to let those who were devoted to one particular branch of it unduly monopolise the proceedings of the Society. One section of members, perhaps, would be music-mad, another section vestment-mad, another preachment-mad. Each branch of the study of ecclesiology, each phase of it, had its place in the great whole, and should be kept in due subordination thereto. Mr. Hope then proceeded to refer to the great progress which had been made in ecclesiology during the last forty years, and compared the past with the present condition of the parish churches of the country. With the view of showing what was the condition of things when he was a lad, he quoted from his work on "Worship in the Church of England" his quaint description of Dorking parish church as it then was, utterly unfitted, as he contended, for the orderly, reverent, and effective conduct of divine worship. Dorking Church as it was, was but a typical instance of the then condition of hundreds and thousands of churches all over the country. And not only outwardly and visibly in the condition of our churches themselves was to be found this improved appreciation of ecclesiology, but it was to be met with in society, even at the most casual gathering. In fact, a new atmosphere seemed to surround clergy and laity of all parties, and an intelligent appreciation of architecture and church art was becoming common. Reverting more immediately to the work which the Society had set itself to do, Mr. Hope advised the members to direct their studies with the view of realising to themselves what was the perfect type of a church as a whole. In visiting churches, the great temptation to members of such societies as the one he was addressing was to run about after detail,—to canvass this brass, criticise that tomb, admire that window, or criticise that other window. That sort of thing was all very well as far as it went, but those who did it missed their point. What members of such societies should do when they visited churches, should be to "inventory," as it were, everything that they saw, and, according to their respective notions, sum up the whole, with the view of seeing how far the various parts made an ideal whole. The Camden Society used to provide its members with printed outline schemes, to be filled in with the particulars of plan, construction, arrangement, details, decoration, &c., of all churches they visited, and the members made it almost a point of honour never to visit an out-of-the-way church without filling up one of those outline schemes, and docketing it in the archives of the society. The observation and precision called forth in the filling up of such papers afforded very good practice to the members of the society, and another result of such a custom was to accumulate a large amount of useful particulars, calculated to be of service in the absence or destruction of all other records. In this connexion, he recommended to the attention of members the duodecimo "Handbook of English Ecclesiology," by Neale,—a work which was now, perhaps, out of print, although a few copies might possibly be found at Masters's or elsewhere. That little work was published by the old society, and gave a sort of inventory of an English church in its various forms. Another thing he would earnestly advise students of ecclesiology to do was to visit as much as possible, and compare one with another, churches old and churches new,—for, happily, it was no longer invariably the case that it was only possible to visit new churches with the view of learning what to avoid. Among many new churches worthy to be visited for such purposes of comparison might be named Mr. Butterfield's All Saints, Margaret-street, Mr. Pearson's new church in Red Lion-square, Holborn, and the same architect's St. Augustine's, Kilburn. In the City itself, one of the most interesting old buildings which the members could visit was the Church of Austin Friars, the nave (the only remaining portion of the building) of which was so ably restored some years ago by Mr. Lightly, a talented young architect who was prematurely cut off by death. It was a very fine specimen of fourteenth-century Gothic, and had served as the model for two very notable churches,—Pugin's St. George's Cathedral, Southwark, and Carpenter's Church of St. Mary Magdalene, Munster-square. St. Saviour's or St. Mary Overie, Southwark; the conventual Church of St. Helen, Bishopsgate; St. Katherine Cree; St. Michael's, Cornhill; Wren's only Gothic Church, St. Mary Aldermary; St. Peter's, Cornhill; St. Giles's, Cripplegate; and many other churches, would afford material for study by the members of the Society in London itself, to say nothing of Westminster Abbey and St. Paul's Cathedral. In the neighbourhood of London were St. Alban's, Waltham Abbey, Windsor, and other places affording material for study. The lecturer next referred to the marked development within recent years of ecclesiology in all parts of the United Kingdom, as witnessed by Sir G. G. Scott's new cathedral of St. Mary, Edinburgh; Mr. Burges's Cathedral of St. Finn Barr, Cork; and the movement now widely spreading in Ireland amongst the clergy for providing chancels and similar adjuncts where they did not exist. In conclusion, Mr. Hope exhorted his hearers not to attempt to compare the incomparable, and pointed out how any attempt to compare St. Paul's in London with St. Peter's at Rome would be unfair to both those fanes. They were both in the Italian style, it was true, and each had a dome in the middle; but there the comparison must end. He suggested that the Society might do well to encourage the making of sketches of the buildings visited by its members, the best of such sketches to be preserved,—possibly to prove of very great value at some future period.

Major Heales proposed a vote of thanks to Mr. Hope, who might be called the Nestor of ecclesiology.

Mr. G. H. Birch seconded the motion, and said it was the intention of the Society to take up the study of ecclesiology *ab initio*, and to study a church as a whole before going into details.

The motion having been carried by acclamation,

Mr. Bereford-Hope responded.

Mr. J. P. Seddon, in moving a vote of thanks to the chairman, said that although he must agree that there had been a great advance in church art during the last forty years, and although the aim of the present day in such work was no doubt far higher than it used to be, much remained to be done, for, unfortunately, even now the standard of art employed in church decoration was an exceedingly low one. Such work ought to be more generally entrusted to architects and artists rather than to tradesmen and tailors.

Mr. Bumpus seconded the motion, and the proceeding came to a close.

Sadler's Wells Theatre.—With reference to the notice of Sadler's Wells Theatre in our last issue, we are asked to say "the contractor is Mr. E. Nightingale, but not the firm, at Albert Works, Lambeth." The staircases, corridors, and upper floors, are to be fireproof on an improved principle, and are being constructed in cement concrete, as a separate contract, by Messrs. Charles Drake & Company.

ELECTRIC LIGHT IN LIGHTHOUSES.

THE INSTITUTION OF CIVIL ENGINEERS.

AT the meeting on the 25th of March, the paper read was on "The Electric Light applied to Lighthouse Illumination," by Mr. J. N. Douglass, C.E.

In 1857 experiments were tried at Blackwall with the electric light, produced by the first magneto-electric machine of Holmes; and on the 8th of December, 1858, the electric light, obtained by Holmes's second machine and a "Duboscq" lamp, was shown on the sea for the first time from the South Foreland High Lighthouse.

On the 1st of February, 1862, the Trinity House exhibited the electric light permanently at Dungeness Lighthouse, by Holmes's magneto-electric machines and lamps. The works for the production of the light were described, and the first cost and maintenance given. The intensity of the electric luminary was about twelve times and a half that of the oil luminary. The cost per unit of light per hour was 0·1165d. for the oil, and 0·1294d. for the electric light. Frequent falling off of the latter light occurred, and the oil light had occasionally to be substituted. Shortly afterwards, the French Lighthouse authorities established the electric light at Cape La Hêve, with the magneto-electric machines of the Alliance Company of Paris. The Souter Point Lighthouse was lighted by electricity in January, 1871. The light was adapted to a dioptric apparatus of the third order. A lower light from the same luminary as the upper one was adopted here for the first time. The optical apparatus for both lights was designed by Mr. James T. Chance, M.A., Assoc. Inst. C.E. A "Holmes" fog trumpet apparatus was also worked from the same engines as the electric apparatus. The total cost of the works was 18,000*l.* The cost of the electric luminary per candle per hour was 0·056d., being rather less than half of the cost per unit at Dungeness. The maximum intensity of the beam from this apparatus was about 700,000 candles. The Trinity House next established the electric light at the South Foreland High and Low Lighthouses, in January, 1872. The apparatus for the production of the light consisted of two steam-engines of 20 effective horse-power, four Holmes's improved magneto-electric machines and lamps, and two dioptric apparatuses of the third order for fixed white light. The cost of the additional works for these lights was 14,800*l.* The intensity of the full power beam from the High Lighthouse was about twenty times that of the old first order dioptric oil light. The relative cost per unit of light was as 100 oil to 30·6 electric. In 1873 the Trinity House adopted, for the Lizard Lighthouses, Siemens's dynamo-electric machine and lamp, and a siren fog signal. These were driven by three of Brown's caloric engines, each of 10 effective horse-power. The cost of the additional works for these lights was 14,936*l.*, and the annual maintenance, including interest on first cost, amounted to 2,365*l.* 6s. 4d., against 1,016*l.* 7s. 11d. for the oil lights. The intensity of the full-power beam of each light was about 330,000 candles, being 211½ times the intensity of the oil light. The relative cost per unit of light was 100 oil to 14·04 electric. The successive improvements in the electric machines, and in the means of driving them, had reduced the cost of the electric light at the Lizard to one-ninth of that at Dungeness, and the quantity of light produced at the Lizard per pound of coke consumed was increased twenty times.

The continued growth seaward of the shingle point at Dungeness led to the removal, in 1876, of the original electric light apparatus, and the substitution of a low flashing oil light and siren fog signal for both lighthouses.

The author gave statements, showing the comparative focussing compactness of the light-house luminaries, which had been referred to, for utilising in optical apparatus, viz., the lights produced by oil, coal gas, and electricity. The focussing superiority of the electric luminary, compared with the best of these, was as 616 to 1. Statements were given of the comparative average cost and annual maintenance of a single lighthouse (shore station) in this country, with colza oil, mineral oil, coal gas, and electricity, as the illuminating agents, both with and without a first-class 20-horse-power siren fog signal. For a maximum degree of light equal to the single or combined intensity of the luminaries of the Lizard, the cost of the more perfect electric luminary per unit of light provided was about $\frac{3}{22}$ and $\frac{6}{25}$ respectively of that of coal gas, and about $\frac{1}{63}$ and $\frac{6}{65}$ respectively of that of mineral oil, at their maximum intensities. With higher intensities of the electric luminary, the cost per unit would be more in its favour, no further addition to the working staff being necessary.

From experiments, it might be assumed that, with the atmosphere so impaired for the transmission of light, the oil luminary, at its maximum intensity, would be fairly visible at the fog signal range of two miles; the electric luminary at its double Lizard intensity of 16,500 candles, would be visible at about four miles. Further, that on more frequent occasions, when the oil luminary would be visible at about eight miles and a half, the electric light would be visible at the full range of seventeen miles.

THE "SUBURBAN BUILDERS" AND THE NEW BUILDING BYE LAWS.

SIR,—As it is a public duty to prevent misconception or deception from being successful, even for a short time, I hope you will allow me to put a few brief queries to those whom it may concern. The prime promoters and supporters of the so-called "Suburban Builders' Association," if honestly acting, cannot be wronged by the following interrogatories, which they are at liberty to answer if they care to do so; but, whether or not, it may be found that the queries here put embody their own answers. The silence that will be observed in some quarters respecting these queries will be considered ominous, and that the handwriting on the wall spells—*Jacta est alea* "Jerry."

QUERIES.

Is it true that the meeting at the Guildhall Tavern, as reported in the *Builder* and other papers, had its rise in a certain district of East London, and was got up in the interest of well-known speculative builders, long engaged in peculiar methods of building, both in Middlesex and Surrey, but principally in the east and north-east districts?

Is it true that the principal promoters and prime movers in this panic movement are large parish and rubbish contractors, owners of huge "shoots," which some of them are at present letting to "jerry" builders to operate upon?

Is it true that one or more of them have purchased monster "shoot" areas in parishes situated in the boroughs of Hackney and the Tower Hamlets, and that one of these large areas is now nearly built over, and that building operations are at this moment being speedily pushed forward on the other?

Is it true that while one of these "shoot" areas was being levelled up with more rubbish lately, another portion was levelled down, because it contained a substratum of sand? And was not this sand carted away and sold, and fresh rubbish substituted for the previously solid ground?

Is it true that on this shoot-ground a large number of houses of the "run-up" kind was erected during the late year, and have not some of the builders thereon been cautioned several times by the district surveyor for open infringement of the Building Act, and more particularly in regard to foundations and wretched mortar?

Is it true, as already reported in the *Builder*, that the Poplar District Board of Works have lately been instrumental in successfully putting a stop to the erection of a new colony of buildings intended to be erected on another rubbish-shoot in the same locality, and are not a number of canal barges at present engaged in bringing dredged river stuff for the purpose of levelling up portions of the same shoot?

Is it true that some of the members of this so-called "Suburban Builders' Association" know the facts exceedingly well, and that one or more of them have endeavoured to procure the condemned ground for the purpose of parcelling it out in lots to speculators?

Is it true that several of those who attended the Guildhall Tavern meeting are interested otherwise in east and north-east London districts in speculative building, as small brickmakers, as well as builders, and that the bricks they make are used mostly on their own grounds, and by their friends engaged in the same class of buildings?

Is it true that respectable builders in London would not use the class of bricks in question, and that the makers and "jerry" builders are those principally interested in the land, the shoots, and the parish dust and rubbish contracts, by which those building plague-spots are created?

Is it true that available low land or shooting-ground is becoming yearly more difficult to procure within a reasonable distance of the City to suit dust-contractors; and, to meet this want, is it not the practice of rubbish contractors and small brickmakers to purchase a piece of cheap land to excavate for brickmaking; next, to use it for a short time; and finally, to let it for building, the original purchaser in some cases acting as the brickmaker and the builder, and sometimes even as the solicitor?

Is it true that some of the promoters and supporters of this new and desperate venture (though they have wisely kept their names in the background) are members of vestries, district boards, and guardian boards, as well as being energetic "jerry" builders; and if so, does it not show that such local representation is a most grievous and lamentable calamity?

Is it true that the Metropolitan Board of Works, through its district surveyors, are, to a great extent, fully aware of the practices of suburban builders of the lowest class, and is it not right and proper that it should be further informed, in the interest of the unsuspecting many, of the ways and means, and motives of several of these "injured innocents" who are now protesting too much at the eleventh hour, and have not come before the public with clean hands?

Is it true that "scamped" building implies bad building in workmanship and materials? And how many of those suburban builders who met a few days ago are prepared to permit an examination of one or more of their houses in a certain locality, by a member of the Royal Institute of British Architects, to be named, with the further condition that the report should be published in the public press, along with the names of the builders?

Is it true that the above queries are generally applicable to suburban speculative buildings on all sides of the metropolis? And if so, are they likely to be answered by the parties indicted by any other than a general denial?

Lastly, is it not true that men who sell and have sold for years adulterated goods, have been obtaining money under false pretences? And if so, can "jerry" builders say they are engaged in a less dishonest employment?

A VICTIM.

SANITARY STATISTICS: LIVERPOOL.

LIVERPOOL ARCHITECTURAL SOCIETY.

AT a meeting of this Society on the 19th ult., the president, Mr. Henry Sumners, reopened the discussion upon Mr. Joseph Boult's paper, read at the last meeting, entitled "Sanitary Nescience." He said Mr. Boult had made the very startling statement that the death-rate in 1841 and 1878 was the same, and further, that overcrowding did not necessarily tend to an increased death-rate; he should very much like to have some light thrown upon these statements.

Dr. Drysdale (visitor) said that Mr. Boult's paper was a very valuable one, but he would doubtless excuse his saying that he had begun with a paradoxical statement, that the death-rate was still as high as in 1841. That was not the fact; and, besides, Mr. Boult would, no doubt, admit that if nothing had been done in the way of sanitary reform since 1841, the death-rate would now be something fearful to contemplate. In fact, Mr. Boult had acknowledged, with admiration, the great efforts which had been made by the town of Liverpool in the cause of sanitary reform. In truth, these had been so great that we were rather apt to think that there was nothing more to be done, and to get impatient of the subject; so it needed the startling assertion of Mr. Boult to attract attention to the fact that there remained still so much to be done. Mr. Boult was quite correct as to the fallacious nature of the ordinary computations upon which the death-rate was calculated. Likewise in his position that the word over-crowding covered a multitude of fallacies, and in particular that it was in nowise synonymous with density of population per acre. In the question of health depending on building, all the accessory causes of disease must be set aside. If people were housed in palaces built in a perfect paradise, as far as situation was concerned, and at the same time deprived of sufficient food and clothing, they would die just as much as in hovels. So let us put away all talk about poverty, dirt, and intemperance, as mere "bunkum" in discussing the present question. The late Mr. Newlands,—an excellent authority,—laid it down that no more than 200 persons should be allowed to live on one acre, and certainly by securing that we go a long way to prevent the more glaring evils of over-crowding. But to carry out such a law is not enough, and Mr. Newlands would have been the last man to stop there, and allow builders to do as they liked while keeping within the letter of a hard-and-fast line like that. As it is, we see great tracts of ground being now covered with long lines of dull, uniform-ugly streets of small houses of low elevation, put up by needy and scamping builders, who keep within the above law as to density of population per acre, and neglect other essentials of health. The authorities should require the building of blocks of houses on complete sanitary principles, by competent and responsible architects, such as the Ashfield-street blocks of Messrs. Fry, or those of the Industrial Dwellings Company in London. These blocks being built high, so as to gain space and pure air by elevation, have a much denser population for the ground they stand on than the above limit of Mr. Newlands, while at the same time they are as healthy as the houses of the rich. The surplus space might be kept open as gardens, boulevards, or play-grounds, to the great advantage of the inhabitants of these blocks, as well as of the beauty and amenity of the town in general.

Mr. Montgomery, in the course of a long and elaborate statement said,—As to the general question, I quite concur with Mr. Boult as to the uselessness of the tabular statement of areas, population, and number of persons per acre in twenty-three cities and boroughs in the United Kingdom, issued by the authority of the Registrar-General, for the purpose of comparison as to density of population or death-rate. The said statement is not only useless, but actually misleading. For example, Dublin is stated to have an area of 10,050 acres, with a population

of 314,666, or 31·3 persons per acre; it is stated that the municipal boundaries are taken for all the towns except London and Dublin, but it is surely a mistake to include within the city of Dublin a large area of more than 6,000 acres of suburban district outside the municipal boundary, thinly populated as compared with the city, for the purpose of comparison with Liverpool, Glasgow, or Manchester, which are stated with reference to their municipal boundaries.

The lowest density of population in Liverpool was 35·5 persons per acre in Castle-street and St. Peter's Wards, and the highest was 180·5 per acre in Everton Ward; while in the city of Dublin the lowest was 40 per acre in North Dock and Usher's Quay Wards, and the highest 165·7 per acre in Royal Exchange Ward, the average for the whole city being 68·6 per acre, as contrasted with 103·3 in Liverpool.

Reverting to the Registrar-General's tabular statement of areas and population, take the city of Norwich, which comprises 7,472 acres, the municipal bounday being somewhat circular of nearly 4 miles diameter, the portion built on being only about an average of 1¼ mile square, or say 1,500 acres, while all the remainder, nearly 6,000 acres, will be open, rural, horticultural, and suburban land sparsely populated. Of what possible use, then, is it to say that Norwich has an average population of 11·4 per acre; it is really about 56 per acre on the inhabited portion.

So also as to Leeds, the extended boundary of which is 7¼ miles from east to west, and the same from north to south, its average length and breadth being about 6 by 5¼ miles, about 33 square miles, having an area of 21,572 acres, of which the proportion of land built on, closely and thickly inhabited, is only about 2½ miles square, or about 4,000 acres, and with a population of 311,860, less 31,860 for the rural districts, the average per acre would be 70, instead of 14·5 as in the Registrar-General's statement. A critical examination of most of the towns quoted would show the utter absurdity of comparing them in such a manner with Liverpool, where at the close of 1868, out of 5,210 acres, only 1,062 were unbuilt on, and at the end of 1878 there will be only about 750 acres not built on.

Passing from this subject to Mr. Boult's statement, "That the death-rate for the whole of the borough in the present day may be assumed as not less than 35 per 1,000, and therefore the sanitary condition of the borough, after all the expenditure and improvements which have been made, is identical with that of the parish in 1842, before the Health Act was obtained or any of the improvements effected, and when Dr. Duncan gave the death-rate in the parish as 1 in 28·75, or 35 per 1,000." I think it is to be regretted Mr. Boult did not consult the published reports of the medical officer, Dr. Taylor, before he wrote that paragraph.

By the courtesy of Dr. Taylor I have been favoured with his report for 1877, and some figures in reference to the yet unpublished report of 1878. In the report for 1877, page 5, it is stated that the death-rate of the borough was 26·4 per 1,000, and the average of the preceding ten years was 29·3 per 1,000. The deaths in the parish were 7,022, and in the out-townships 6,882, and these figures, calculated at the estimated population, would give 33·3 per 1,000 for the parish and 21 per 1,000 for the out-townships; and a reference to the tabular statement which I have given for Liverpool will show the death-rate in the several wards for 1877 and 1878, by which it appears that Everton, although having 180 persons to the acre, had only a death-rate of 20 per 1,000; while the low-lying districts in Scotland, Vauxhall, St. Paul's, and Exchange Wards, although not so densely populated, had death-rates varying from 32·8 in 1877 to 46·6 in 1878. Everton, no doubt, owes its salubrity to its favourable situation on sandstone, on the crest and slopes of a hill, having by its gradients facilities for the rapid removal of surface and other impurities, and most of its streets running from west to east, and enjoying the advantages of bracing and purifying breezes, when the atmosphere is heavy and sluggish and filled with germs of disease in the Vauxhall-road and Marybone districts, where the people exist on wet clay foundations, or, still worse, on artificial foundations of waste chemical and decomposing animal and vegetable rubbish, and where fresh air circulates slowly. At page 4 of Dr. Taylor's report is a tabular statement which shows that in the twelve years from 1866 to 1877 inclusive, the deaths from diarrhœa had diminished from 1,145 in 1866 to 605 in 1877, and those from fever had dropped from 1,523 in 1866 to 382 in 1877, circumstances which seem to indicate in a very remarkable manner that the sanitary operations carried on during that period had been of a very beneficial character.

Besides over-crowding, dirt, bad food, bad clothing, exposure, and intemperance there are other causes of a climatic character which affect the death rate. Low temperatnre in winter, deficient rainfall, and sultry weather in summer contribute largely, along with the other circumstances mentioned, to swell the death rate, especially in the low-lying districts where the houses are crowded on the land, and the people crowded in the houses.

Mr. Boult (quoting from the reports of Drs. Parkes and Sanderson, in 1871), says the death-rate in Rodney-street was 10·71 per 1,000, and in Sawney Pope-street 55·86, or, relatively, say 11 and 56 per 1,000. Sawney Pope-street is one of six selected streets, namely, — Lace-street, Adlington-street, Henry Edward-street, Bispham-street, Addison-street, and Sawney Pope-street, to which special reference was made by the doctors in their report. Taking the district from the centre of Lace-street to the centre of Sawney Pope-street, and from the centre of Standish-street and Marybone to the centre of Fontenoy-street, its area, including the streets in it and half those adjoining, is about 29,700 square yards, or 5½ acres, on which there are 538 houses (including a few public-houses), the population of which was said to be about 5,000 persons in S. and P.'s report. This would give 840 persons to the acre (S. and P. said about 1,000) and 55 square yards for each house, and taking 7 persons to the house it would be 8 square yards for each person, which was the same as found by the late Mr. Newlands, in 1863, in the Vauxhall-road and Hornby-street district, where, on an area of 13,720 square feet, or 1,525 square yards, there were 190 persons, or 605 to the acre (see Mr. Newland's Report of 1869, page 21).

Now, taking a block of Rodney-street between Mount-street and Leece and Hardman streets, its area, including Rodney-street and half those adjacent, is 26,700 square yards, or 5½ acres; on it there are forty-eight houses and twelve stables.

Rodney-street contains 88 houses, and in 1871 the population was 607, which gives an average of rather less than 7 per house, which, for the 48 houses in the block I have taken, would be 336 persons, and for the 12 stables take 36 horses, or 372 living beings on the 5½ acres, equal to 83 per acre; and taking the 48 houses and 12 stables on the 26,700 square yards, we get an average of 445 square yards for each building, or, rejecting the stables we have 556 square yards for each house and its appurtenances, as contrasted with 55 yards for each house in Sawney Pope-street district; and reckoning persons and horses at 372 to 48 houses, or 8 beings per house, we have 70 square yards for each living being in Rodney-street, as against 8 yards for each person in Sawney Pope-street.

If we suppose the houses to be crowded on the land, and the people crowded in the houses in Rodney-street in the same proportion (nearly ten times) as in Sawney Pope-street district, we would have the death-rate rapidly rising from 11 per 1,000 to probably three times that amount, notwithstanding the advantages of situation and foundation or subsoil. The overcrowding of houses on the land, and people in the houses, seems to me, therefore, to be a most important factor in producing a dirty, unhealthy condition of the people and their homes, especially in the low-lying districts, and when aggravated by other disease-producing causes, a high death-rate must be the result.

On looking at the Ordnance map of Liverpool, surveyed from 1845 to 1848, and published in 1850, we notice very large open spaces of uncovered land, especially on the north, east, and south sides, and when we look at the map of 1879, nearly all covered with buildings, we see at once how much has been done to over-crowd the land, and we can imagine in what a vitiated and dangerous atmosphere we would have to live and breathe if it were not counteracted by the large and beneficial sanitary works which have been in progress for thirty years. I find from the borough engineer's reports that there were 59,647 new houses erected in the borough from 1841 to 1878 inclusive, and that from 1872 to 1878 inclusive, there were taken down 2,115 houses. The papers containing the numbers pulled down previously to 1872 have been mislaid, but as the houses on the sites of the railway stations, &c., and portions of the docks were pulled down since 1841, it may be assumed that from 1841 to 1871 at least 8,000 may have been removed for all purposes, or over 10,000 from 1841 to 1878, leaving 49,000 or upwards, of additional houses since the time referred to in Dr. Duncan's report, as mentioned by Mr. Boult. In 1841, there were 45,385 houses, and a population of 286,487; in 1879, there are probably twice as many houses, and almost twice the population on the same area, and it is manifest that but for the immense sanitary works of various sorts, — drainage, sewerage, paving, water supply, court improvements, examination and cleansing, examination and closing of unhealthy cellars, &c.,—it would be difficult to live at all in some of the less favoured parts of the town.

From all I have stated I think it is very evident, indeed it may be considered as an axiom, that the sanitary works of the past thirty years have greatly contributed to improve the health of the borough, and to diminish the death-rate, and when Mr. Boult considers that instead of 35 per 1,000 being the normal death-rate of the borough, and 3·5 per 1,000 higher than in 1839-41, the death-rate in 1877 was only 26·4 per 1,000, and for the previous ten years only 29·3 per 1,000, and when he reflects on the facts stated as to the areas and population of the districts referred to he will be inclined to greatly modify his statement on page 75, "that all the sanitary efforts during the past thirty-six years have been misdirected," and he will admit that what may not be over-crowding in Everton at 180 per acre, or in the Ashfield and St. Martin's Cottages at 550 to 650 per acre, becomes very great overcrowding in Sawney Pope-street and similar districts at 840 to 1,000 per acre, and that such overcrowding, although not the sole cause of increased mortality, is yet a very powerful factor with others in causing it; if we can diminish overcrowding, we wil diminish one cause of a great deal of home and personal dirt and impurity.

Mr. E. Nugent said he had written to the Registrar-General, and had obtained the death-rates in the three large towns, Liverpool, Manchester, and Glasgow, for the eleven years, 1868 to 1878 inclusive. They were as follow:—

DEATH-RATE PER THOUSAND OF POPULATION.

Years.	Liverpool.	Manchester.	Glasgow.
1868	30·4	33·6	30·7
1869	30·4	30·7	34·0
1870	33·0	29·9	29·6
1871	35·2	31·3	32·9
1872	27·2	28·7	28·4
1873	25·9	30·1	29·1
1874	32·1	30·5	31·1
1875	27·5	30·0	28·6
1876	27·6	29·2	25·3
1877	26·5	27·4	24·8
1878	29·4	27·9	24·9
Average	29·56	29·94	29·04

On page 70 of Mr. Boult's paper, the death-rate for rural districts is stated to be 18 per 1,000, and for urban districts 26. From the Registrar-General's reports he found that from 1847 to 1876 inclusive, the death-rate in the rural districts of England and Wales was 19·8 per 1,000, and for 1876 only 18·6; in urban districts 24·8, and for 1876 22·8, whilst in 1847 it was 29, and in 1849 30 per 1,000.

The President thought it would be well to give the discussion a more practical turn. He had to complain of the way in which in days gone by the Corporation had deliberately allowed night-soil to be deposited on land which was afterwards built upon without its having been removed; as the greater portion of such land in Liverpool was clay land, the rain, after soaking through the night-soil, could not possibly get away, and in hot weather was bound to produce a result most detrimental to the health. He was building a church at Kirkdale, upon the site of which he had found cart-loads of tinned meats, cabbage-stalks, &c, and in the immediate proximity a row of houses had been built, the foundations being built in a trench scratched out in this deposit of night-soil. He shuddered to contemplate the result during the first summer weather we had; if such things were allowed, we should have a high death-rate, regardless of medical officers of health, registrar-generals, or any one else.

Mr. Nugent, continuing his remarks, said that some years since Alderman Bennett had called attention to a large district at the east end of

the town, where houses were being erected on similar deposits to those alluded to by the President. He himself remembered seeing Windsor-street, at the south end, some years back, entirely formed of night-soil deposits 5 ft. to 6 ft. deep, and this overlay a clay formation, the land having been excavated for brickmaking purposes. This was in 1871 or 1872. In 1874 the street was paved; in 1877 the water-pipes were laid down in it; and in September, 1878, one of these burst, owing to a subsidence in the road, caused, he imagined, by the decay of vegetable matter among the night-soil, of which it was composed. The result was, the road and side-walk sank considerably, and the walls of two houses were undermined and cracked from top to bottom. Mr. Boult's paper embraced many social and national questions. He had expressed a desire to see good houses built for the working classes at a rental of 1s. 6d. per week. He thought this would be best achieved by building the houses higher. Queen Anne's Buildings, in London, though built for a better class, were eleven stories high. Why should houses for the labouring classes not be so built? Mr. Boult had also referred to the windows of bedrooms being as a rule only opened at the lower part; they should not, however, be opened at the top only, but the correct plan was to open them both top and bottom, and thus secure a thorough circulation of air.

The discussion was adjourned till April 2nd.

BLOOM ON TILES.

SIR,—"L." complains that a white matter covers the face of the tiles in his hall. This is probably caused by the vitriol in the cement beneath rising up through the floor. It will continue to do so so long as any of the chemical remains therein. Let the settlements be brushed off wherever they appear, and have patience. In those parts of England where red brick is used for ground-floor rooms, in lieu of the usual stone or boards, many thrifty housewives scrub their floors, once a week or so, with stale milk, and it is surprising how bright this application makes the bricks look. "L." may take a hint therefrom, and wash the tiles occasionally with milk. The application will be found advantageous.

HARRY HEMS.

SIR,—We observe in your last publication a etter signed "L.," in which the writer states hat his hall tiles (Craven, Dunnill, & Co.'s) are always covered with a white matter which sweeps up like snow, and that the tiles are covered again soon after. This white substance is an efflorescence of lime that arises from the nature of material in which they have been laid.

The foundation for tiles should be cement concrete brought to a level surface by a coating of not less than a quarter of an inch in thickness of pure Roman or Portland cement, and on the foundation so prepared, when sufficiently dry and hard, the proper material for laying tiles is the best Portland cement, mixed with good clean sharp sand: then this white deposit disappears after a few cleanings.

It often is the case that builders, from inexperience, or a notion of mistaken economy, lay tiles in lime, and then the efflorescence described will certainly arise.

We know no remedy but taking up the tiles and relaying them with the proper material.

Grease spots may be removed by a brush with soft soap and warm water. Most other stains may be cleaned by the application of a diluted solution of muriatic acid and water, rubbed on with pumice stone, taking care to wash off the acid quickly, or it will decompose the cement on which the tiles are laid.

CRAVEN, DUNNILL, & CO. (Limited).

The National Coffee Public-Houses Society.—We would willingly aid the committee of this society in calling attention to the movement now taking place for establishing coffee public-houses, the time having arrived for carrying it forward in a large and comprehensive manner. What has been done proves, as the committee say, beyond question that they are not only self-supporting, but a great commercial success, thus doing away with the idea that charitable assistance is needed. It has been determined to form a society with adequate capital, and under the control of a board of management that will command universal confidence. Capt. W. Hugh Phipps is the honorary secretary.

BACKING UP THE EDDYSTONE LIGHT-HOUSE.

THE following has been addressed to the Institution of Mechanical Engineers, London. The writer, who dates from Nelson, New Zealand, requests us to publish it.

In "Chambers's Journal," of May 31, 1878, the fourth paragraph in the article "The Month, Science, and Art," reads thus:—"The Institution of Mechanical Engineers have published their usual yearly list of subjects on which they would be glad to have papers for reading at their meetings, &c." The fifth is as follows:—"One of the subjects is improvements in the Light-house, by which we are reminded that a new lighthouse at Eddystone is talked of. The present structure was built by Smeaton in 1756-59, and ever since, as long before, as indicated by name, the sea has been wearing away the rock on which it stands, and now threatens to undermine the foundations. The tower would be built on an adjacent rock, with, as we may believe, all the best improvements in construction and lighting."

When I read the foregoing paragraphs, I was a great deal surprised that such a wearing away should have been permitted to go on for so long without attempts being made to stop it and preserve such an immensely beneficial structure from certain destruction, which, if permitted, would cause so large a loss of life and property before a new one could be constructed that I shudder to think of it. When I know your Institution, and many other kindred ones, contains so many clever and ingenious engineers and scientific men of repute, I wonder some should not have hit upon a method of stopping the wearing away of that rock; yet the thing is very simple, and when once done will thoroughly resist any power of the sea under any circumstances for ever. If it was not a matter of such immense importance to the maritime service, not only of English, but of all other nations, I would not have ventured to intrude.

The innumerable experiments that I have made with coal tar, in order to utilise it and find out its combinations with other materials, to make what is known to the scientific men as asphalte, show the following proportions are the best, coal tar ten gallons, sifted slack lime one peck, the tar and lime to be mixed together first in all cases. If gravel or rubble is saturated with the above mixture,—the former in all cases to be thoroughly dry,—I call that asphalte concrete; if fine sand is mixed with it that I call asphalte mortar. I think all the members of your Institution know well that the above material is perfectly impervious to the water; therefore, if let down into the water, it soon becomes a solid mass, resisting all the power of water as well as atmosphere. Any wall built with good stone and asphalte mortar is, without doubt, an everlasting wall. I have arrived at the above conclusions after many experiments and immense labour, both physical and mental. Therefore I am perfectly satisfied that if asphalte concrete is let down on the western, south-western, and southern side of the rock on which the Eddystone Lighthouse now stands, to such distance as may be deemed necessary, it will assuredly stop the wearing away of the rock, and if the present tower is good, or not damaged much, I would respectfully recommend the adoption of the above plan, instead of building a new tower on the adjacent rock, which I know personally is not well suited for the purpose, besides entailing an enormous expense. If the asphalte concrete plan is adopted it must be borne in mind that the greater the quantity of tar is used in saturating the gravel, the more it spreads out at the bottom, and *vice versâ*, but it has the advantage that it becomes all the more solid and cohesive to resist the attacks of the waves and time. And, if the preservation of the rock and the present tower is decided on, I would recommend that an additional strength be given to the tower, by surrounding the lower part with masonry oversailing towards the top. The stones should not be large, but of good quality, and well jointed on the outside face, and well bedded in asphalte mortar. The object of it is twofold; the one to strengthen the tower, the second to save the force of the waves against the structure, and prevent the wash-up to the upper part of the tower and the lantern. If the stone of the tower above the proposed addition should show looseness,—I mean, if the cement has been vitiated by the combined destructive agencies, the atmosphere and water (which is always the the case in course of time),—I would advise the decayed mortar to be scooped out about 2 in., then the joints well filled with fine asphalte mortar, using little more lime than the above mixture.

I have found the above-named asphalte concrete the best and cheapest for stopping the encroachment of a river on its banks: thus scoop the bank to about 45 degrees, then cover with asphalte-concrete from 6 in. to 1 ft., using rather wetter for the bottom. If it is thought that the bank is likely to be undermined, dig a trench as deep as can be for the water, use fine gravel and well saturated for the bottom: so likewise if the water is deep alongside of the bank.

The same material can be used for many other public works, such as culverts, abutments and piers of bridges, facing them with stone at the angles of abutments, and at the end of the piers lay boulder stones out of the stream with coarse asphalte mortar, and with concrete inside from 1 ft. to 2 ft. in thickness, according to the height of the work. Arched bridges can be built with the same, by making a rough frame for arches and the sides, using the biggest boulders for the arch, the small end downwards. Let the frame remain till it rots away. The asphalte will have hardened to bear any weight and will last for ever.

I maintain that all the work that is done with the asphalte concrete and mortar will be almost everlasting, as no water nor atmosphere under any circumstances has any destroying effect upon it, of which any of your scientific members can satisfy themselves by experiments.

ERICK ORR.

WATERLOO BRIDGE.

SIR,—As the workmen are at the roadway on the bridge again, would it not be as well to have it laid so as to incline to the centre, so that the slush should run there instead of the sides as at present? A slight incline would effect this. Would not the wooden blocks be better than the soft earth as at present in the centre, which is ground up, and runs to either side into the deep gutters, and splashes the passers by? The footways are very narrow for the increased traffic, which at present is quite twenty to one what it was when the toll was in existence. The bridge will prove a constant expense unless a more solid roadway is made. The broken granite is dangerous, as the vehicles throw them on the footway if they happen to run off the soft ground on to the granite blocks that run each side of the roadway. Several persons, to my knowledge have been struck by them, I think it would have proved less expensive in time to have relaid the footway with another material.

The granite, although now re-chipped, will wear quite smooth in less than five years, and will be as dangerous as before. Some may say that it lasted many years before, but then there was no traffic compared to now and the future. It was dangerous for many years during the company's time.

If anything can possibly be done to prevent the refuse of the road in wet weather from being thrown on the foot-passengers, I am sure your paper will earn the thanks of the many thousands who are compelled to hurry over the bridge daily.

W. THOMAS.

A Circus on Fire.—On the 25th ult. an alarming and destructive fire broke out at Keith's Circus, in Princess-street, Derby, on the exact site where Harris's Music Hall shared the same fate in 1873. The circus had only just been completed. Monday evening was the opening night, when the house was crowded almost to suffocation. Everything passed off successfully; the place was closed, the gas turned off, and all appeared to be left in safety, an old man, named William White, being left in charge of the building as night watchman. Nothing was noticed until about a quarter to five o'clock on Tuesday morning, when the whole building was observed to be enveloped in a mass of flames. About a quarter to six o'clock the roof of the place, which had by this time almost become gutted, fell with a tremendous crash, and this seemed to act almost as an extinguisher, for the flames were soon subdued. When the firemen could get about the ruins and *débris* they discovered the skeletons of no fewer than twenty-one horses and ponies, donkey, two goats, and several monkeys, and the charred remains of the unfortunate watchman, William White.

THE ALBERT INSTITUTE, WINDSOR.

The foundation-stone of this long-postponed building was laid on the 28th ult., under good augury. It may be remembered that the land was bought and paid for many years ago, the cost of it being 600*l.*, and beyond that there was a balance left in hand. The subsequent subscriptions have raised the fund to 2,400*l.* The contract for the new building has been taken, after open tender, by Mr. Woodbridge, of Maidenhead, for 4,400*l.*, for which sum, including the lighting and warming arrangements, the building is to be completed. The building will have to be furnished, which will involve a further cost, of which we are not at present in possession of any estimate. From the figures we have given, it will be seen that the work of the committee has been by no means completed. They still rely upon the public spirit of the inhabitants of Windsor.

The building has a frontage of about 70 ft. towards Sheet-street, and consists of three stories, comprising a great hall for public entertainments (with *artistes'* rooms in connexion therewith), lectures, &c.; a library, reading-room, and ladies' reading-room; a museum, art and science class-rooms, committee-room, caretaker's quarters; stores and warming-chamber in the basement, and the customary accessories, such as lavatories, cloak-rooms, &c. The main entrance is in the centre of the façade, the reading-room being on the right hand, and the library and ladies' reading-room on the left; immediately in front of the visitor, the great hall is entered by two ample doorways, between which it is proposed to place a bust of her Majesty the Queen. The great hall is 66 ft. long, 33 ft. wide, and 25 ft. high, and will accommodate 500 seats, exclusive of the gallery over the entrances. In connexion with the entrance to the platform (which is removable on the occasion of a ball or as may be desirable) are the *artistes'* dressing and retiring rooms. The building has been so placed upon the site that the hall will be lighted on both sides by rows of windows, whilst at night it will be illumined by three large sunburners in the crown of semi-elliptical ceiling. The interior of the hall has not been decoratively treated with architectural features for two reasons,—the first being that the funds at the command of the committee would not at present warrant such treatment on a satisfactory scale; and the second being that it is hoped to complete the interior of the hall, at least, by a system of chromatic decoration, in conjunction with the fast-becoming famous Windsor tapestry, which would be more effective than any merely architectural accessories, and for which plain surfaces offer the necessary opportunities. The warming and ventilation of the hall, its acoustics, the provision of ample means of egress, &c., have all been the subjects of attention. From the central vestibule a wide stone staircase leads to the art and science class-rooms on the first floor; these are separated by the museum, which occupies the centre of the building. Of the upper floor it need only be said that it provides for a resident caretaker, and comprises rooms for recreation, for committee meetings, and for such other purposes as time and circumstances may suggest. The principal front is designed in the style of the fifteenth century of English Gothic architecture. It is being executed in red brick, with dressings of a warmly-tinted freestone, and will be embellished with carving sparingly introduced. In the centre of the *premier étage*, and on a pedestal in a richly-carved and canopied niche, a statue of the Prince Consort is intended to occupy, appropriately, the place of honour The architects are Mr. H. F. Bacon and Mr. E. Ingress Bell, of London.

We may mention that Mr. Henry, the director of the Windsor Tapestry Works, has given as his contribution to the work the decoration of the ladies' reading-room, and a fine subject in tapestry for the hall; and Mrs. Richardson-Gardner has given a life-size marble statue of the Prince Consort, to be executed in Rome, expressly for the building.

Dr. Livingstone's Statue in Glasgow.—A bronze colossal statue, by Mossman, of Dr. Livingstone, has been erected on the west side of George-square, Glasgow. The statue, a very good one, represents Dr. Livingstone with a Bible in one hand and a cap in the other. This is the thirteenth statue in George-square.

WEST OF ENGLAND LABOURERS AND THEIR HOMES.

Sir,—Your readers will probably remember some sketches of the wretched farm labourers' hovels of West Chinnock in the *Builder* of December 7th, 1872, through a visit paid by your correspondent, in company with myself, at the commencement of that winter. I have just visited the spot where those two cottages stood. Of course they have been pulled down, and equally of course no others have been put in their place. It is easy enough to cause landowners to destroy bad dwellings, but very difficult to induce them to repair old cottages or erect new ones. I think at that time I stated they belonged to Lord Portman. This was indignantly denied, but it came out that they belonged to Lord Ilchester. That they could not deny the wretchedness of the hovels is proved by the fact that they razed them to the ground. Some neighbouring dwellings have been patched up with new thatch, but cottages are, generally speaking, in a wretched condition in that neighbourhood to-day. I wish you could see the state of the dwellings surrounding the two churches of West and Middle Chinnock,—churches only a few yards apart,—whether they belong to Lord Portman or Lord Ilchester I know not; but what the clergy and their families think of such habitations is still more in the clouds of mystery; hovels where families huddle in one room,—ay, in one bed,—without a water-closet among the whole of them. There are holes in the ground truly, and posts with cross bars artfully contrived to answer the purpose,—and these in sight of the very church-doors. You see, sir, you cannot catch these landowners very well; they chop and change this kind of property so. Many will say, "Oh! these are squatter cottages." Yes, many of them were, and how have they been taken from the squatters? You are aware, sir, that for centuries past the nobility and gentry have been annexing, conveying, taking in, and possessing themselves of the people's common lands. Church property, especially that of the old Roman church, of course, has been served in the same way, so that not only the squatter, who has exercised his legal right of building him a homestead on the common, but batches of small peasant proprietors have been disestablished in *this* way. The steward sends on a man with two shillings to the cottager's wife, telling her that she may keep one if she will give the other to a man who will call for it. The man who receives the shilling gives a receipt for it to the woman in the name of the neighbouring landowner, and by this many a "peppercorn" rent has often been proved, and property of this humble description has come into the hands of first one and then the other nobleman, as they generally let this kind of property, or sell a lease of it to a neighbouring landowner, and this constitutes a title in after years. Thus it is that estates have grown to such enormous proportions. There are roads, ten or fifteen miles in extent in a straight line through the Ilchester and Portman estates—high roads that are so narrow through taking in the green road-side patches, that wagons cannot pass one another, but have to wait at the cross-roads or a gate side in order to pass. So hungry after real estate are our landowners, that not a patch of village green, or a single specimen of independent cottage property will remain in the country after a few more years. Then the police-gamekeepers have so much power placed in their hands, that if any of the labouring classes are found on common lands, even to old women gathering dried sticks, they are prosecuted under the game laws.

The Rev. Mr. Newell, of Chiselborough, in his letter to the Yeovil sanitary authorities, commented upon by you, takes care not to mention the name of his noble patron in connexion with the cottages of which he complains, and the consequent depression of the people. Depression! Why I saw last week, in Mr. Newell's parishes (for he is a pluralist), people more degraded than the Zulus or the Kaffirs. Some of the Rev. Mr. Newell's parishioners are *cretins*, arising, perhaps, from the fact that the cottages are unsupplied with drinking-water, there being no supply. I observed a pump, that would have been the sole supply of several cottages but for a running brook of surface-drainage water. I do not know to what qualm of conscience on the part of the rev. gentleman to attribute his application to the Yeovil Board. He had for some time opposed any and every attempt of mine or other friend of the Union to alter this state of things, and was probably not aware of the publicity that would attend his application. The united livings of Chiselborough and West Chinnock were worth, in 1830, from 1,100*l.* to 1,200*l.* per annum; and though the population of the villages has been terribly decimated, we do not generally find the parsons take any harm. I notice, whenever we go to hold farm-labourers' meetings the clergy of the State Church get up counter attractions. I have known the farmers and parsons to give the men a supper, to keep them away; but they have eaten up their suppers, and, instead of staying to drink, they have come to the meeting in a body. It is not to be wondered at that they are interested in any attempts to better their condition, when a woman assured me last week in public that her husband could only earn 8*s.* per week at farm labour, with which to maintain seven children, his only perquisite being drink during extra work. This is much about the price now from Sherborne to Taunton, and on to Dartmoor. I notice that the noble landowner of Chinnock has put up a very fine public-house there, whether to entice the labourers to spend their evenings from home I know not. Canon Girdlestone said that in consequence of the wretched dwellings the English labourer spent his evenings in a pot-house, and was buried in a pauper's grave.

Sir, there can, I think, be no doubt in the minds of thinking men, whether they agree with me on the whole or not, that the decay of our peasantry is a very serious fact. Mr. Commissioner Boyle has stated in his Blue Book that the population of the rural West had decreased one-third in twenty years! In a time when our export trade is being menaced, and all branches of industry seem paralysed, it is a terrible thing to think of, that those who cultivate our land and fight our battles are absolutely dying out. Meanwhile the land is not producing a third of the food it is capable of doing, and the savings of the country are rapidly going abroad. In the neighbourhood I have mentioned there is the greatest difficulty on the part of the labouring man to obtain a small allotment of land. When he *does* get it, he has to pay five or six times as much as the farmer. Then he is turned out of it at the caprice of the steward when he has got his land made into garden-ground. At Chiselborough lately nearly all the small farmers were turned out in order to make up a large farm. The pretended reason was that the chief farmer had a wheatstack burnt down, and that the only way to find out the culprit was to evict all the inhabitants. I have heard of the Spanish Inquisition and the thumb-screws in the Tower of London, but I was not aware that this kind of torture was practised in the last quarter of the nineteenth century. If I had not caused a great exposure of all this, Chiselborough would have been almost empty of inhabitants by this time, and I never heard that the Rev. Mr. Newell or any other clergyman remonstrated. But the best of it was, that no incendiary act was committed, as the cause of the fire was pronounced by practical men to be spontaneous combustion, owing to dampness and green weeds amongst the wheat.

But I must not weary your readers with further details of the misery of the people and the tyranny of their oppressors in our rural districts. We shall hold our grand annual demonstration in the Frying-pan, Ham Hill, Yeovil, Somersetshire, within sight of Chiselborough, on Whit-Monday, June 2nd next, when some very ugly facts will be openly stated before the 20,000 persons who will congregate there, if the weather will allow them.

George Mitchell,
"One from the Plough."

P.S.—Since writing the above, I have had the following statement made to me by a young man of Chinnock, who is working in London, and doing well.

"My father's house is at East Chinnock, and is called Rot's (Rat's) Castle. It contains one room below, paved with broken stones. You can look between the flooring boards of the two little bed-rooms which form the ceiling,—that is to say, there is no ceiling, but only the floor-boards whitewashed. The windows are about one foot square. In wet winters the water comes half way up the legs of the chairs. In summer there is a perfect pest of fleas. There are two tiny bed-rooms above, separated by a thin partition, very shaky and rickety, and

there is not room above or below for an ordinary man to stand upright in. The thatch forms the sole covering of the house; not a trace of ceiling or plaster. There are holes in the thatch that let in the daylight and the rain. The doors are unprovided with any fastening. There is no grate, but only a hearth for burning sticks and turf. A close, earthy, unhealthy smell is always perceivable in this dwelling. There is no W.C., —a hedge hard by forming the only arrangement for decency for men, women, and children. There is a hole dug in the ground from which the drinking-water has to be obtained, or there is a small stream of surface drainage near. The farm upon which the occupant works is rented from Lord Portman by a chairman of the Yeovil Board of Guardians. Wages vary: lately 8s. to 9s. per week. 1s. 3d. to pay for cottage. Scarce any garden. Nothing extra in harvest unless by piece-work. Education such that scarce any adults can read or write, the Church Catechism being almost the sole education of the place."

WAGES AND WHEAT.

SIR,—A high rate of wages and general prosperity are by no means incompatible with a low price for corn, or any of the other necessaries of life. On the contrary, it should be one of the main results of our inventive genius and industry that food should be so plentiful that none, even the poorest, might want. To show that this is so by example, I will quote a letter just received, written in New Zealand since Christmas, which reports wheat selling there as low as 4s. per bushel, and quarters of lamb, weighing about 8 lb. each, ticketed in the butchers' shops at 2s. 6d. each, and labour of all kinds everywhere in demand at high prices. Farm labourers are wanted at 10s. per day of eight hours; pick and shovel men, 9s. per day; bricklayers and joiners, 15s. per day, and so on. Women's labour in the same proportion. Dairy girls, 35*l*. to 40*l*. per year; hotel girls, 40*l*. to 52*l*.; and experienced servants, 30*l*. to 60*l*. per year. Charwomen get 4s. per day and their food. And imported goods are not much enhanced in value by import duty, which is 10 per cent. *ad valorem* on most goods. The reason there is at the present moment so much poverty and misery in this country, which abounds in wealth, is that the wealth is so unevenly distributed. The laws favour the acquisition of wealth by the comparatively few at the expense of the many; hence we find, as the records of the Probate Court testify, that some persons inherit and accumulate wealth which they cannot use, to the detriment of the many, who are reduced to want.

A word as to systematic under-employment of machinery. I have already, by your favour, pointed out that our mills might be kept running longer hours without increasing the working time of the operatives, by working shifts, say two of eight hours each per day, the first from six a.m. to two p.m., and the second from two p.m. to ten p.m. The Factory Acts will have to be altered to permit of this, and no great hardship would accrue to the operatives. The same might easily apply to mines. But can you sell the increased product?

We have a report from Low Moor of machinery working there in the production of textile fabrics, which wants no human supervision, and so works all day and night too.

E. GRIMES.

ART FOR ART.

SIR,—The question under discussion is not one of "goody-goody," but of common-sense and of logic. In the report, in these pages, of the lecture referred to, I found it stated in one portion of it, if I recollect rightly, that the artist should be self-conscious, and in another that he should not. This appears to me to be slightly contradictory. Art talk, however, has become so paradoxical of late that such opposite statements may not be commonly regarded as inconsistent. So much for what is called my "accusation."

The leading points of my opponents' creed are few, and may be summed in the following brief sentences:—"It is more god-like not to know, than to know what you are about"; "Religion, and morality at their best are instincts"; "Self-knowledge, so highly extolled by the sages, would be a mistake"; "Instinct and not reason should be our guide." All that I can say upon this latter tenet of my adversaries is, that if instinct were a better guide than reason we might expect the beasts of the field to be more religious than men,—horses to kick over their traces on Sundays, and to whip men in everything, literature and fine-art included.

But what shall we say for the logic and consistency of your last Saturday's champion of Art for Art, and of unconscious in preference to conscious morality, when he writes thus:—"*See*," says he, "that your nature be pure"! *See!* why that is self-consciousness at once. That *seeing* implies the looking to your nature, the possession of that self-knowledge which knows whether that be conformed either to good or evil. I at least can give a reason instead of an instinct for the faith that is in me. But have I not already said enough?

ART FOR GOOD.

KITCHEN BOILER EXPLOSIONS.

SIR,—No answer having appeared to my inquiry in your impression of January 18th last, asking for a valve to a kitchen boiler, which, not requiring lifting and attention, would be a real security in the case of overpressure coming on gradually, rather than a delusion, I enclose an account of an attempt to meet the want communicated to me by Mr. Farey, of the firm of Donkin & Co., with permission to send it to you.

His plan is to construct a weak place in the boiler where it may burst harmlessly.

He describes the boiler, to which he attached the apparatus, as made of Lowmoor iron $\frac{3}{8}$ in. thick, and welded, and as having a calculated bursting strain of 3,600 lb. per square inch. Allowing for defective welding, &c., it would, in his opinion, bear safely a pressure of 500 lb., while the lowest estimate of many practical men is 360 lb. In an ordinary house in which the bath is in the first story, and the boiler in the basement, the pressure on the boiler is 15 lb. per square inch. If then a weak place is constructed, which will yield with a pressure of 150 lb., the boiler will be sure to burst here, before it does elsewhere, and will not burst here unless the pressure is ten times greater than the boiler has ordinarily to bear. The weak place is constructed by attaching a ⊤ to the return pipe about 12 in. from the boiler, and connecting it with a vessel placed under the floor (or anywhere near the boiler where it may burst safely). The vessel is formed of 3 in. lead pipe, having an indent worked down in a lathe all round it to the thickness of $\frac{3}{64}$ in., and having the end closed with lead worked dome-shaped. This vessel, Mr. Farey finds by repeated trials, will burst with a pressure of 150 lb.

There is, of course, no difficulty in constructing a chamber under the floor where the end of the vessel may blow off, and the steam escape harmlessly, while, as to the deterioration of the boiler through neglect or otherwise, Mr. Farey considers it would leak long before it would burst with a pressure of 150 lb.

Even with this vessel (I may add) Mr. Farey thinks a bath boiler, of the kind described, "a dangerous contrivance," though more so without it.

HORACE FIELD.

MYCENÆ MEASUREMENTS.

SIR,—In the account given in your last week's publication concerning Dr. Schliemann's recent discoveries at Mycenæ, the entrance passage to the tomb of Agamemnon is stated to be six mètres broad (19·685 ft.), and 36 mètres long (118·113 ft.). These admeasurements evidently correspond with thirteen Primitive or Egyptian cubits of 18·216 in. (19·734 ft.) and 78 of the same cubits (118·404 ft.), thus showing that this measure was in general use at that early age; the other cubits being the offspring of the great Pyramid were exclusively Egyptian, and it is unlikely, therefore, that any connexion will be found to exist between them and the architectural remains of ancient Greece.

W. HAYDEN.

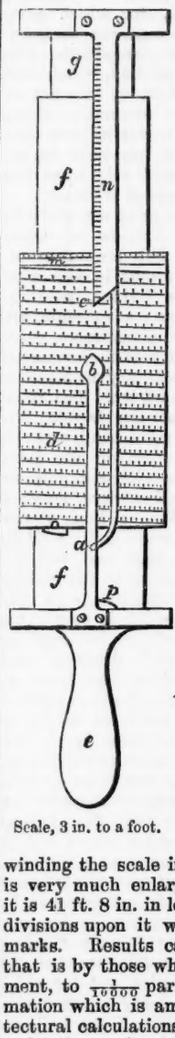
LADDERS' SLIPPING.

SIR,—It seems to me that a very simple plan to prevent the many accidents arising from the slipping of ladders would be to make the lower end of the ladder of a suitable form to receive a short steadying plank in the direction of the ladder's width, on edge. This, when once adjusted and secured, would make slipping sideways almost an impossibility.

R. INWARDS.

SPIRAL SLIDE RULE.

PROFESSOR GEO. FULLER, C.E., of Queen's College, Belfast, has invented a new form of slide-rule for arithmetical calculations, which seems to us to improve and extend so greatly the capabilities of that instrument, as to render it extremely efficient for the calculations required by the architect, both as regards facility and exactitude.



Scale, 3 in. to a foot.

The rule consists of a cylinder (*d*) that can be moved up and down upon, and turned round, an axis (*f*), which is held by a handle (*e*). Upon this cylinder is wound in a spiral a single logarithmic scale. Fixed to the handle is an index (*b*). Two other indices (*c*) and (*a*), whose distance apart is the axial length of the complete spiral, are fixed to the cylinder (*g*). This cylinder slides in (*f*) like a telescope tube, and thus enables the operator to place these indices in any required position relative to (*d*). Two stops (*o*) and (*p*) are so fixed that when they are brought in contact, the index (*b*) points to the commencement of the scale. (*n*) and (*m*) are two scales, the one on the piece carrying the movable indices, the other on the cylinder (*d*).

In the ordinary forms the rules are either straight or circular, and facility of handling has practically confined the former to about 2 ft. in length, and the latter to about 8 in. in diameter. These give for the logarithmic scale a length of from 1 ft. to 2 ft., and consequently the number of divisions on them is very limited. It will be seen by the expedient adopted of winding the scale in a helix round a cylinder it is very much enlarged, in fact so much so that it is 41 ft. 8 in. in length, and thus allows 7,250 divisions upon it without any crowding of the marks. Results can thus be easily obtained, that is by those who have mastered the instrument, to $\frac{1}{10000}$ part of the whole, an approximation which is amply sufficient for all architectural calculations.

Another point which seems to very greatly facilitate calculations by this rule is that the reading of the scale is by means of indices and not by a second scale, as in the usual form of rule. Those who have worked with the latter will have often been troubled with the difficulty of reading or placing a number that falls between two marks on one scale against one that falls between two marks on the other.

By means of a scale marked on the movable index, and one on the cylinder above the logarithmic scale, any power or root of a number is easily obtained; so that all the various operations of arithmetic can be performed by means of the rule.

On the fixed cylinder of the rule are printed tables, thought most useful. One set of tables gives the equivalent decimal fraction to our various fractional English weights and measures. These will very greatly aid the taking out of quantities both of weight and measure.

The rule is manufactured by Mr. Stanley, of Great Turnstile.

A Good Example.—A little event in connexion with the production of our enlarged number of the 22nd ult. is deserving of mention, showing as it does that the old-fashioned feeling of mutual respect between employers and employed of the old school has not died out. Messrs. Wyman & Sons, the printers with whom we have been long connected, took the opportunity of acknowledging the many years' services of two of their *employés*, Mr. W. H. Monro and Mr. Bate, the chief of the composing-room and the "reader" respectively of the *Builder*, by presenting to each of them a handsome ring, with a suitable inscription, as a token of regard.

THE FITZALAN CHAPEL, ARUNDEL.

THE DUKE OF NORFOLK *v.* ARBUTHNOT.

THIS case, which involves questions of considerable archæological and architectural interest, and upon which we have commented on another page, was tried in the Common Pleas Division of the Supreme Court of Judicature, before Lord Chief Justice Coleridge (without a jury) last week. The arguments and evidence occupied several days. The action, which in form is one of trespass, is, in fact, brought to try the right of ownership to the Fitzalan Chapel, which forms the east end of the ancient and well-known parish church of St. Nicholas, Arundel.

The plaintiff, relying mainly on an extensive user by his family for 400 years, asserts that this building is his absolute private property; while the Rev. George Arbuthnot, the defendant, contends that the building is part of the great chancel of the parish church, and that he has a right, therefore, to have free access to it, both as vicar and as parishioner. On the part of the plaintiff, some very interesting ancient documents have been produced in evidence with the view of supporting his case, that the chapel is a private chapel. On the other hand, it is contended for the defendant that the very name of Fitzalan Chapel, under which the duke describes the building, has no real existence, the contention being that it is part of the collegiate church, which was founded in the reign of Richard II., and the greatest stress is laid on the aspect of the church and building itself, which, considered architecturally, and taking into consideration the position of the ancient pulpit, the high altar, and the traces of what certainly once was the rood-loft in the church, are inconsistent, it is alleged, with any other than one distinct building. The duke, on the other hand, points to the iron gateway, coeval with the fabric itself, which from the first has shut out the church from the chapel, and of which his ancestors have always kept the key, and he contends that the documents cited in the case bear out his contention by showing that the Fitzalan Chapel was part of a college which was built by his ancestor and dedicated to the Holy Trinity, while the church was dedicated to St. Nicholas, whose name it continues to bear to this day.

One of the witnesses called for the defendant was Mr. William Butterfield, the well-known architect, who said he had prepared plans of the church as it was at three different periods,—viz., after the Dissolution, and before and since the recent restorations. Taking the ground-plan, it was the plan of an ordinary cruciform church, with a longer chancel than usual in a parish church. There was nothing in the church or chancel which architecturally suggested that the Fitzalan Chapel was anything else but the chancel. The iron screen or grille was very unusual in English churches, and this was a very unusual kind of screen. The gates were of unusual width, and the screen was unusually open, the openness being carried down to the ground. There were remains of a rood-loft at the front of the opening between the chapel and the church. There was positive proof of a rood-loft. There were remains of a pulpit, coëval with the pier, in the south transept. The pulpit was in a natural place, supposing it was a single church. The altar in the south transept would have no connexion with this pulpit. The altar must have been one of several others. The chief altar could always be seen from the pulpit. He inferred from his examination that the nave and chancel must be taken together as part of the same building. The lady-chapel was of the same date as the chancel. The structure between the lady-chapel and the chancel was built, all of it, at one period.

Another witness on the same side was Mr. Richard Holmes, solicitor, and town clerk of Arundel, who said he was a native of Arundel, and local solicitor of the Duke of Norfolk. He was elected churchwarden in 1854, and had remained so ever since. The iron screen was always the same as now, within his recollection. The fastenings and bolt were on the parish side; the keyhole on the chancel side. It was always locked with a padlock and chain. He remembered the old wooden framing. The fastenings were entirely under the control of the churchwardens. Whether the gates were open or shut depended on the time of the year. They were open in summer, and folded right back against the arches. He had opened them himself a great many times. He had been to the old organ-loft, but he did not recollect an opening in the woodwork. The windows in the south transept had been repaired in his time by the parish. The Duke of Norfolk had never paid for any repairs to the transept. There was a wooden partition separating the north aisle from the lady-day chapel. Above there was an opening of lattice-work, 6 ft. square, above the door. The lattice-work was enclosed within doors, which were shut or open as the churchwardens directed. In 1852 the whole was blocked up.

Lord Coleridge has taken time to consider his judgment.

ARCHITECTS' ACTIONS.

CARR *v.* HARRISON.

THIS case was heard at the Sheffield County Court, on March 26th, before Mr. T. Ellison, judge. It was an action brought by Mr. Martin Carr, Change-alley, architect, against Dr. Geo. Harrison, St. James's-row, to recover 42*l.* for work done. The plaintiff's case was that he drew up plans and specifications for two dwelling-houses at Ranmoor, Sheffield, by the defendant's instructions. When tenders were sent in for the buildings, the cost was considerably more than the defendant anticipated; he abandoned his purpose, and subsequently sold the land.

The defendant first intended to build a detached dwelling to reside in, for which the plaintiff made him preliminary sketches, and gave an approximate estimate. This plan was abandoned, and another plan made for two semi-detached houses, when another estimate was given, but the plans were rejected on account of cost. The plaintiff then prepared sketches of less expensive houses, but were not accepted by the defendant, as he considered something better should be built. A final set of plans were made, and approved, and instructions given to prepare specifications and quantities, and advertise for tenders. The lowest tender was 1,200*l.*, on which the claim was based, 2½ per cent. being charged for plans and specifications, and 1 per cent. for quantities.

For the defence, it was submitted that 5*l.*, which had been paid to the plaintiff, was sufficient compensation, the cost of the buildings being several hundred pounds more than the defendant intended to pay.

The building rules of the estate were produced to prove that the price of a pair of houses on that particular part should be of the value of 300*l.*

His Honour, in summing up, said that as he (the judge) understood it, all such rules fixed a minimum price only. The defendant, who was a retired gentleman, wished to include a greenhouse in addition to a good library, &c., and could not expect to have these things provided for the amount stated in the defence.

Judgment for the plaintiff for the sum claimed, with costs. Mr. Harold Thomas, instructed by Mr. Samuel Allen, was for the plaintiff; and Mr. Gatty, instructed by Messrs. Smith, Hinde, Smith, & Co., defended.

CURRAN *v.* PEACOCK.

THIS was a claim, brought in the Warrington County Court, by Mr. Robert Curran, architect and surveyor, carrying on business at Warrington, against Mr. Ralph Peacock, brickmaker, for twelve guineas for preparing plans, &c.

For the plaintiff it was stated that a Mr. Manley saw Mr. Curran, and instructed him to prepare some plans for some cottages on some land, for the purchase of which he was then negotiating. Mr. Manley ultimately had some conversation with Mr. Peacock, the present defendant, the result of which was that he called upon the plaintiff, accompanied by Mr. Peacock, and told him that he had relinquished his right to the land, and had handed it over to the defendant, Mr. Peacock, who would pay him (plaintiff) for preparing the plans. Mr. Peacock assented. Mr. Curran completed the plans. He subsequently did other work in connexion with them, and submitted them to the Corporation for approval. Mr. Peacock called upon Mr. Curran afterwards, and the plans were modified in some particulars. They were ultimately approved by the Corporation, which fact was made known to the defendant by the plaintiff. The defendant had never denied his liability until recently, when he appeared to throw the debt on the shoulders of Mr. Manley.

For the defence, Mr. William Manley, builder, said he thought of taking the land at first. He ordered Mr. Curran to make the plans.

Judgment for the defendant, with costs.

YORK HOUSE WATER-GATE.

AT the last meeting of the Metropolitan Board of Works a report was presented by the Works and General Purposes Committee, recommending that the opening up of Buckingham-street, Strand, to the ornamental garden of the Victoria Embankment should be carried out by the raising and opening of the York-buildings Water-gate, and the committee were empowered to take the necessary steps to carry this recommendation into effect.

This will involve the virtual destruction of the gate as a work of art, and will obliterate an interesting landmark in the history of London. In its present condition York Gate serves to indicate the site of one of the ancient palaces that once adorned the Strand, as well as marking the former extent of the river before the construction of the Embankment.

The London of the Restoration has almost disappeared, and there are but few relics remaining of what London was after the Great Fire. In York Gate we have one of these relics, and it seems incredible that anybody, and especially a body entrusted with the municipal government of the metropolis, should propose to disturb this curious, and in fact unique, structure, to deliberately falsify local history by putting it to a purpose for which it was never intended, and to render that which is now venerable ridiculous.

The gate is in nobody's way, and the plea of public convenience, which sealed the fate of Temple Bar, cannot be urged in the present instance. It is to be hoped that the Board may be induced to reconsider their determination, and will not spend the public money on a scheme which will benefit nobody, and will grieve every artist, antiquary, and topographer.

LONDONER.

PARTY-WALLS.

RILEY *v.* INGOLDBY.

IN this case, before the Master of Rolls' Chief Clerk, the question was decided on Friday, the 21st, as to who was entitled to receive the value for the outer half of party-walls. The decision was, as follows,—Where the mortgagor grants the land demised to him and the messuage thereon, and the outer party-wall is built as to half only on the land demised, the mortgagor as builder is entitled to take the amount which the builder of the adjoining property would have to pay in respect to the half party-walls.

WILLIAM RILEY.

BUILDERS' CLERKS' BENEVOLENT INSTITUTION.

IN connexion with this Institution a dinner was held at the Guildhall Tavern on Wednesday evening last. Mr. Thomas F. Rider occupied the chair, and was supported by about a hundred gentlemen.

In proposing the toast of the evening, "Success and Prosperity to the Builders' Clerks' Benevolent Institution," the chairman traced the history of the Institution from its origin some thirteen years since. He went on to say that the basis of the Institution was threefold,—Firstly, builders' clerks not above the age of fifty-five years, who had been for not less than five years occupying that position, were eligible for pensions of 25*l.* a year, and 20*l.* a year to widows. On this ground alone he thought a subscription would be found a thoroughly good investment of money. Then the Institution had given 500 guineas for two presentations to orphan schools, and two orphans of builders' clerks had been elected to the benefits thereof. A third and most important feature was the granting of temporary relief. To enable a man to overcome some pressing difficulty, and to bridge over an emergency, was help of the best kind, and he believed no feature of the Institution had been more advantageous than this. The cases which had been assisted had been carefully inquired into, and none but the members of the committee knew of the temporary difficulties of the applicants for relief. Why was it, then, that the Institution did not receive better support from the class sought to be benefited? In the "London Directory" might be found the names of some 1,400 builders and others of cognate trades in business in the metropolis. Assuming that at least half of them employed a single clerk, the Institution ought to look for aid to some 700 builders' clerks, whereas it was actually supported by some fifty subscribers in that body. If any builder's clerk saw anything in the Institution to object to, or anything in the management to complain of, or that might be improved, let him call on the committee at 27, Farringdon-street, E.C., and they would undertake either to convince him that he was mistaken, or to admit their own error, and endeavour to correct it. The committee did not desire the Institution to be a begging charity, but self-supported by those most concerned in its welfare, while he felt at the same time that it was well deserving of support by the builders themselves, and of a place among the charities of the metropolis of the world.

The toast was drunk with enthusiasm.

Mr. Howard Colls proposed the health of the "Architects and Surveyors," for whom Mr. Franklin replied.

Mr. Thomas Stirling proposed "The Employers," on whose behalf, and also in the name of the Past Presidents, Mr. Plucknett responded.

The Secretary, Mr. H. J. Wheatley, read a list of donations promised in the room, which, headed by the chairman with twenty guineas, amounted to 144*l.* 17*s.*, besides some subscriptions,—an announcement received with cheers.

Other toasts followed.

STAINED GLASS.

Edinburgh.—Some months ago (says the *Scotsman*) the Society of High Constables of Edinburgh resolved to assist in the scheme for the decoration of the restored choir of St. Giles's Cathedral, by filling in one of the windows of the clearstory with stained glass. The window selected was the easternmost on the north side of the clearstory, and on the 14th inst. the glass was placed in position. The design embraces two shields—one in each light,—representing the arms of the city of Edinburgh and the royal standard of Scotland. Both shields are supported by crossed Constables' batons, while beneath are also batons and the insignia of the Society. The window was designed and made by Mr. D. Small, Leith-walk, Edinburgh.

Collyhurst.—A stained-glass window has been erected in St. James's Church, Collyhurst, to the memory of the Rev. Edward Roper, a native of Manchester, who was for seventeen years a missionary on the West Coast of Africa. The subject is the "Baptism of the Eunuch." The window is by Messrs. Magee & Co.

Winchester.—The daughters of the late Dr. Mayo have placed a memorial window in the north aisle of the cathedral, to the memory of their father and brother, who followed the same profession. The glass is from the firm of Clayton & Bell. The window has six lights, and in these are placed, in the upper three, St. Swithin, bishop; St. James the Great, the partner of St. Peter; and William of Wykeham, bishop.

CHURCH-BUILDING NEWS.

Shedfield.—The new parish church of Shedfield, Hants, is now complete, save the erection of the tower and spire and some of the internal fittings. The foundation-stone was laid so long ago as May, 1875. The architects are Messrs. Colson & Son, of Winchester, and the work has been carried out, under their superintendence, by Messrs. Knight & Son, builders, of High-street, Wickham. The building is in the Decorated style, and consists of a nave, south aisle, chancel, and south transept. Local stone is used for the walling, whilst the dressings are of Bath stone. Within, coloured bricks are used considerably, with Bath stone for dressings. An arcade of four bays divides the nave from the south aisle, and on the north side is an arcade and five similar bays, the most westerly one being that opposite to the lower part of the tower and porch. The pulpit is of Caen stone, octagonal in shape, and standing upon a central shaft of the same material, and six outer columns of polished green marble. The pulpit is erected in memory of Samuel Wilberforce, late Bishop of the Diocese, and of Thomas Fosbery, M.A., one of his chaplains. The chancel arch springs from clustered shafts with carved capitals, and these and the rest of the carved work have been carried out by Mr. Harry Hems. The internal fittings will be of pitch-pine, but these are not yet complete. The roofs are of timber, open, and unvarnished. The nave roof rests upon vaulting shafts, supported by carved stone corbels. The clerk of works during the main portion of the work was Mr. H. A. Amey.

Seaforth.—The Church of St. Thomas, Seaforth, has been re-opened, after renovation and alterations under the direction of Mr. J. F. Doyle, architect, Liverpool. The whole of the old-fashioned box-pews have been removed, and replaced by open pitch-pine seats, giving accommodation for 100 more persons. The former gallery, which extended round the edifice and ran out towards the centre, has been done away with, and a new gallery erected and placed back a distance of 8 ft. The cost of the works, which have been carried out by Messrs. Holme & Nicol, of Liverpool, amounts to something like 2,000*l.*

Carlton.—On the 13th ult., the parish church of Carlton-in-Cleveland was re-opened, after restoration. In fact, the old building has been almost entirely demolished. The new edifice which (according to the *York Herald*) is constructed from designs prepared by the vicar (the Rev. G. Sanger), is in the form of a cross, and composed of freestone, from quarries in the neighbourhood. There are north and south transepts, each about 14 ft. square. In the south transept, the vestry and choir accommodation is situated. From the centre of the building rises a wooden bell-turret. Accommodation is provided for nearly 250 persons. The work has cost about 800*l.*

New Shoreham.—It is stated it is shortly intended to utilise Mr. Edwardes's gift of 300*l.* to this church (which he made nearly twelve months ago), by carrying out his desire of seeing the windows along the south aisle made of similar style to those along the north aisle, which were carried out in 1876, together with the general restoration of the fabric, under the direction of Mr. Arthur Loader, architect, Brighton.

Upleadon.—The ancient church of Upleadon, lying about eight miles from Gloucester, between Newent and Hartpury, was re-opened on the 6th ult., after restoration. Its peculiar tower, some 80 ft. high, of timber and brick-work running in black and white vertical lines, with bluntly-pointed roof of slate, stands up a conspicuous landmark for many miles of widely undulating country around. The nave and chancel of the church are built of stone, with stone tile roofing. The building having become greatly dilapidated, particularly the tower, steps were taken last year to raise a fund to carry out the necessary repairs, and to put the structure into a fit state for the celebration of divine worship. Mr. Ewan Christian, architect, was consulted, and the necessary plans, &c., were prepared, and contracts amounting to about 500*l.* were entered into by Mr. Fowles, builder, of Hartpury, Mr. Dick, of Derby, being clerk of the works. In September last the church was closed and the work commenced. The work includes a new chancel arch, and a re-construction of one side of the timbered tower, which contains two bells. The floor has been laid with red tiles, and substantial new seats, of dark deal and varnished, have been fitted on a raised timber flooring.

PROVINCIAL NEWS.

Exeter.—The new Rougemont Hotel is now completed, and only remains to be furnished. It was commenced two years ago on the site of the old city prison, and overlooks the Queen-street station. The building, which has been erected by a joint stock company, is of brick, with white Beer and Bath stone dressings. The floor of the large central hall of the hotel is of encaustic tile, supplied by Messrs. Craven, Dunnell, & Co. The hall is 60 ft. long, 20 ft. wide, and about 30 ft. in height, running up to the level of the second floor. It is supported to the level of the first floor by Doric columns, and above these the support is continued by Corinthian columns. A corridor runs around the central hall on the first floor. The coffee-room is situated in the wing that juts out into Queen-street. Its length is 60 ft., width 30 ft., and height 19 ft. Four Doric columns carry the box girders which form the panelled ceiling. The approach to the first floor is by means of a grand staircase 6 ft. wide. At the head of the staircase the window is to be filled by Mr. Drake, of Exeter, with a stained-glass representation of the royal visit to Exeter, when the King gave the name of Rougement to the Castle. The kitchen is among the twenty-five compartments in the basement, and here two large ranges have been fixed by Messrs. Garton & King, and the same firm is also about to fit up the laundry and its extensive steam drying-room. It is intended to erect stables at the back, and also a large room for balls and concerts. The building was designed by Mr. C. E. Ware, A.I.C.E., of Exeter, the quantities being taken out by Mr. Charles Gould, of London. The building has been constructed by Mr. James Matcham, of Plymouth, with Mr. Hallet as foreman, and Mr. William Gill has been the clerk of the works. The plumbing, electric bell apparatus, and gas fitting is the work of Mr. E. Whipple, Plymouth; the glazing has been executed by Cashmore, Bristol; the lifts supplied and fixed by Waygood & Co., Leeds; the kitchen and laundry fittings by Garton & King, Exeter; the paper-hangings by Bradley & Sons, Exeter; and the locksmiths' work has been done by Mr. S. Pearse, Exeter. The hotel is to be opened for business by May-day. The cost of the building has been about 21,000*l.*, and the furnishing will cost another 5,000*l.* or 6,000*l.*

Bristol.—Bengough's Almshouses, Horfield-road, Bristol, in the rear of Colston's Almshouses, St. Michael's-hill, have been completed. They were endowed by Alderman Bengough, who died in 1818. The buildings are in the Queen Anne style, and have been designed by Messrs. Foster & Wood. The central block and pair of wings form three sides of a quadrangle, the fourth side being a low boundary wall in the road. The material employed is brick, with freestone dressings, mullioned windows, coved eaves, and a roof of red tiles. The façade has a central pediment inscribed with the name and date of foundation, while the arms of Alderman Bengough are inserted just below. The wings have their own porches, and an independent entrance is provided for every pair of suites on the ground floor, with a staircase from the entrance to the corresponding suites above. The ground floor and first floor are divided into ten well-aired and lighted suites of three rooms,—living-room, bedroom, and scullery. The contract has been substantially carried out by Messrs. Forse & Ashley, for about 5,500*l.*; Mr. E. Sheppard executed the carving, and Messrs. Parker & Bush laid out the lawn.——The new clock, chimes, and bells of the Bristol Grammar School, have just been completed. They have been manufactured by Messrs. Gillett, Bland, & Co., of Croydon. The clock strikes the hours upon a bell of 8 cwt. 0 qrs. 26 lb., and chimes the four quarters on four other bells—the same as at the Westminster palace and St. Mary's, of Cambridge, the time being shown upon two 5 ft. copper dials, with gilt figures and minutes on a black ground, fitted in a drum on cast-iron ornamental brackets projecting from the face of the tower. The chime part of the clock is constructed on Gillett & Bland's new principle, with movable steel pins; so that the chimes can be adjusted or altered at any time with the greatest facility. The bells have a total weight of 27 cwt. 2 qrs. 13 lb.

The total cost of the clock, chimes, and bells, has been over 400*l.*

VARIORUM.

"THE Extravaganzas of J. R. Planché, Esq. (Somerset Herald). Testimonial edition." We are very glad to hear that it is proposed to publish immediately, in five volumes, a complete edition of that portion of Mr. Planché's Dramatic Works with which his reputation as a dramatic author is more particularly associated, we mean the Extravaganzas which are in some cases out of print, whilst one or two of them have never been published. Mr. Planché has undertaken to revise and correct each piece for the press, and to contribute prefatory and marginal notes, which will comprise much information respecting the many celebrated performers connected with the representations; and will form an interesting record of the principal London theatres, their managers and companies, for a period extending over sixty years. The editing of the Extravaganzas has been entrusted to Mr. T. F. Dillon Croker, F.S.A., and Mr. Stephen Tucker (Rouge Croix), and the entire profits will be presented to the veteran author. It will be, in fact, a Testimonial edition. ——"The Ogam inscribed Monuments of the Gaedhil," in the British Islands, by the late Richard Rolt Brash, F.S.A. Scot., edited by Mr. Geo. M. Atkinson, is about to be published by Messrs. Geo. Bell & Sons. We agree with the writer that,—"The antiquaries and philologists of Great Britain should feel as deeply interested in this subject as those of Ireland, for it is to be remembered that twenty-three Ogam inscriptions, identical with the Irish examples, have been discovered in England and Wales, and twelve in Scotland."——Here is a paragraph from the *Leisure Hour* as to Parliamentary Blue-Books:—"Mr. John Walter, M.P., in a recent debate, said that a vast sum was wasted annually upon the printing of unnecessary Blue-books, some of which, two or three inches in thickness, and costing hundreds of pounds to print, contained nothing but a mass of undigested tabular matter. It was certain that 20,000*l.* or 30,000*l.* might be saved under this head alone every year, without any detriment to the service of the country. Of the thousands of Blue-books annually printed, by far the largest part is sold, unread, as waste paper. One case we give as an example of many. A Scotch M.P. occupies apartments in the house of a relative during the season. A week or two before the end of the session various circulars are received from dealers offering to buy waste paper. These are handed to the butler, who sells to the best

bidder. The amount is large enough to be taken as an ample fee from the Scotch M.P. to the butler for his service. A few of the members send the volumes to public libraries and other places where they may be useful to their constituents, but the majority of members allow their servants to dispose of them as waste paper.

Miscellanea.

Readings from Shakspeare.—For years, Mrs. Theodore Martin (and Helen Faucit before her) was chief favourite at Glasgow; and she has received there great ovations. All this Mrs. Martin remembered when distress fell upon many of the inhabitants, ruined by the late Bank failure, and kindly offered to give a reading from Shakspeare in aid of the fund raised for their relief. The offer was, of course, eagerly accepted, and was carried out on the 21st ult. in the Queen's Rooms, before a large and brilliant audience. It was an immense success. The Glasgow press describe the event in glowing colours,—"With a perfect knowledge of the poet, and a voice of incomparable range and ring, Mrs. Martin, without help from stage furniture, read her selections from 'Romeo and Juliet' and the 'Merchant of Venice' with a charm of style that was marvellous in its effects. Mrs. Martin has in her nature more of the fascination and witchery of the poetic spirit than any artist we have known; and, consequently, her melodious breathings of the love scenes between the lovers in the finest love-play in the world were perfect poetry set to the music of perfect utterance. Mrs. Martin read also the Casket Scene and the Trial Scene from 'The Merchant of Venice,' and both were masterpieces. In both the artist showed again, as often before, that she has perfect mastery over the subtlest winds of feeling as over the stormiest gusts of passion." The result of the effort, including the esteemed lady's own subscription, was to add 500*l.* to the relief fund.

Chairs, Easy and Uneasy.—Consider for a moment what is needed in a common chair that it may suit its purpose. It should be strong enough to be sat upon without need of any special caution on the part of the sitter, and yet it should be so light as to admit of being easily shifted. Now, in most drawing-rooms, a heavy person,—who, probably, most desires to seat himself or herself,—has to pick and choose in order to escape a catastrophe. It will not do to take the first seat that offers, and even if it suffices for a perch, the sitter must be careful not to lean back. Lightness has been so studied in some chairs, that only the slimmest ladies can use them. They do not suit even a thin youth who has a trick of lounging. They are fit for ghosts, but not for honest flesh and blood. Is not this absurdly unscientific? A very little extra strength in construction would add but imperceptibly to their weight, and relieve every man at least from apprehension when he desires to be seated. They might be just as handy, and yet safe. Then look at chair-backs. Fashion now makes some upright, and sacrifices comfort to a whimsical demand of taste. Backs are intended to be leaned against, but who can lean when his spine is at right angles to his thighs? Look at elbows, too. They are meant to rest those of the sitter, and should thus be at least flat, if not slightly channelled. The arm of the chair should be the converse of that of the man. If made round, his arm perpetually slips off when he would rest it; and yet there are chair-elbows which are not only slippery and narrow, but also rounded on the surface. The most fashionable chair at present rather discards the padded cushion, which catches the elbow and prevents it from sliding off. Perhaps a broad, flat-padded surface to the arm of the chair best fulfils its purpose in steadily supporting that of the sitter. The provision of chairs with spring-seats is, again, a mistake. They are not only exceptionally heating, but they convey the idea that instead of your being welcome to sit down, you are being continually pushed off. When you seat yourself on one you are conscious of having to overcome opposition. The only thing to be said in their favour is that when you want to rise you have a shove up. The ideal chair,—the chair of rest,—should have as little padding as possible, but accommodate itself to the human frame that wants to be rested; and I have often wondered why some enterprising and scientific furniture-maker has not produced a more anatomical article.—*Leisure Hour.*

Society of Biblical Archæology.—On Tuesday night last a meeting of this society was held its rooms, 9, Conduit-street, the President, Dr. Samuel Birch, of the British Museum, in the chair. The secretary, Mr. Harry Rylands, read a paper by Professor Lushington, on "The Historical Inscriptions of Seti I. in the Temple at Karnak." These inscriptions and sculptures record the victories of Seti Meneptah, or, as he is most commonly called, Seti I., who, on coming to the throne, assumed the name of Ramenma, otherwise read Menmara, although, according to the sacred syntax, the name of the sun-god Ra was wont to be written first. He reigned fifty-one years, beginning about B.C. 1455, in Professor Lushington's opinion. These hieroglyphical annals are to be found, along with many valuable records, in the great temple of Ammon Ra, at Thebes. This magnificent sanctuary is more ancient than any other Theban building, dating from the earliest Pharaohs of the great Twelfth Dynasty, between which and the Nineteenth, to which Seti I. belonged, many centuries intervened. As the sacred metropolis of the Theban kings, they had already vied with each other in ornamenting it with fresh architectural glories, sculptures statues, and obelisks. Seti I. conceived the idea of nearly doubling its size, and began to build the Great Hall, with its hundred columns, and to enrich it inside and outside with innumerable sculptures. He did not live to complete this *chef d'œuvre* of Egyptian art, but it was completed by his son, Ramses II., styled the great, the Sesostris of the classical historians. Owing to the destruction of the upper portion of the walls many of the historical bas-reliefs are lost; but there still remains a copious chronicle of Seti's victories, beginning on the northern side, and relating to the Pharaoh's conquests in the earliest years of his reign. They give representations of lakes, fortified towns in a state of siege, and all the various incidents and scenes of the battle-field. Rivers are characteristically delineated, the Nile being indicated by its crocodiles and peculiar fishes, while a bridge serves as a communication with the opposite bank, showing that the Nile was already bridged at that early period.

Harvey Tercentenary Memorial.—The models for the statue of Harvey which it is proposed to place at Folkestone have been on view in the picture-gallery of the South Kensington Museum. The models were three in number, distinguished by the letters A, B, and C. It is intended that the statue shall be of bronze and the pedestal of granite. Model A represents Harvey in gown and cap as a doctor of medicine of the University of Cambridge. He is looking down at a heart lying upon a table; in his right hand is a pencil, and his left hand holds a note-book, in which he seems to be about to write. The figure in B is upright, the head erect, and the right hand placed on the breast, as if to feel the pulsations of the heart. In the left hand is the heart of some creature. The doctor's gown is worn, but in C it is thrown aside upon a table. In this last model a dead deer is placed on the ground, as it were, behind the figure. The anatomist is looking downward at a heart in his left hand, and in the right is a dissecting-knife. It has been decided that the commission for the statue shall be intrusted to Mr. A. Bruce Joy, who is the designer of the model marked B. Mr. C. B. Birch, the author of one of the other designs, has given more consideration to the pedestal than is apparent in the selected design.

City of London School Competition.—Notwithstanding the exacting nature of the demands made upon competitors by the conditions of this competition (commented upon in the *Builder* for March 1st, p. 226, *ante*), we learn on authority that no fewer than fifty-three architects have sent in designs, several individual competitors having each submitted two, and even three, alternative designs! We have been unable to ascertain when the designs will be on view, or whether the committee will seek he aid of a professional referee.

A New Synagogue.—The new West-end Synagogue in St. Petersburg-place, Bayswater, illustrated by us recently, was consecrated on Saturday by the Rev. A. L. Green, minister of the Central Synagogue. This makes the tenth temple of the United Synagogue. It has been erected at a cost of 21,000*l.* The interior is still unfinished. It affords seats for 800 persons. The marble mosaic pavement here was laid by Messrs. Burke & Co., of Newman-street.

The Royal Horticultural Society.—It is understood that the "1851 Commissioners" have determined to take possession of the Gardens at South Kensington: in fact, that they have formally demanded it and have been refused. The law courts will probably be appealed to to settle the precise legal position of the two bodies. The future appropriation of the land is unsettled.

Our Manufacturers.—The mainspring of a successful manufactory is a chief who knows every process of the trades carried on, the *rationale* of all that has to be done, and who has a thorough knowledge of mechanical laws, and that amount of combined mental and manual dexterity which but few possess. We cannot expect the present generation of manufacturers to learn all that is necessary. Formerly a lad was put to work, and, if he was not taught scientific principles, he at least became a competent workman before he became a master. But now this is all changed. Lads do not enter the shops and work at the machine or the bench; they come in leisurely as "young gentlemen," and take a little light amusement at office work, and then blossom forth into masters,—of what? Not of the trades their workpeople carry on. If they had a thorough training in mechanics, and were made competent draughtsmen, there would be some hope of them. But they are not so trained: in fact, they know nothing that is of any practical use, and are really entirely dependent on their workpeople, instead of being what every manufacturer should be, the master craftsman of his factory. It may be said that there are large capitalists who own successful manufacturing concerns, although they have no technical skill. This is true, but such men are owners, not masters: the real masters are the managers, and such men do frequently possess the requisite skill, and are in fact chosen because they have it.—*Martineau and Smith's Hardware Trade Journal.*

TENDERS

For new schools for 360 infants in Laygate-lane, for the South Shields School Board. Quantities by Mr. C. Connel. Messrs. Oliver & Leeson, architects:—

Scott & Son	£4,103 10 0
Inglis & Reah	4,089 0 0
Pringle	3,932 12 5
Bruce	3,889 0 5
Smith	3,886 8 4
Nichol	3,855 7 10
Shotten, Bros.	3,839 9 4
Mackey	3,827 0 0
A. & P. Marshall	3,819 13 0
Atkinson & Co.	3,782 8 0
Simpson	3,688 3 5
Heppel	3,676 14 7
Armstrong	3,642 2 0
Harwood	3,600 0 0
Robson & Tremble	3,596 16 0
Richardson & Co.	3,591 13 1
Kennedy & Son	3,582 15 3
Middlemiss, Bros.	3,567 0 0
Elliot	3,537 0 0
Atkin & Co.	3,522 17 9
Robson	3,500 15 4½
Town, Bros. (too late)	3,492 18 0
Harvey	3,490 8 4
Holliday & Christie	3,469 18 3
Shell	3,462 1 2
Grisdale	3,451 0 0
H. Atkinson	3,450 0 0
Miller	3,420 9 4
Suddards	3,410 7 0
N. & R. Reed	3,399 1 1
Hirst & White	3,259 0 0
Thompson	3,253 5 0
Allison	3,250 13 9

For stabling, cart-shed, smithy, workshop, and dwelling-house, at Hammersmith, for the Fulham Board of Works:—

Lucas & Son	£6,630 0 0
Julian & Co.	6,570 0 0
Dickenson	6,400 0 0
Wagner	6,250 0 0
Braid & Co.	6,180 0 0
Mears	6,100 0 0
Beal	5,988 0 0
O'Keeffe	5,955 0 0
Raymes	5,890 0 0
Hatton & Co.	5,846 0 0
Scott	5,663 0 0
Newton & Triggs	5,350 0 0
Aitchison & Walker*	5,225 0 0

* Accepted conditionally.

For premises in the London-road, Croydon, for Mr. C. F. Bowman. Messrs. Rutley & Blackwell, architects. No quantities supplied:—

Smith & Son	£2,919 0 0
Saker	2,870 0 0
Taylor	2,809 0 0
Colls	2,750 0 0
Legg	2,662 0 0
Hobbs*	2,600 0 0
Smart	1,835 0 0

* Accepted with modifications.

For three villa residences in Thurlow-road, Dulwich, for Mr. Rich. Mr. James Miller, architect:—

Higgs	£2,977 0 0
Hatton & Co.	2,958 0 0
Mould	2,800 0 0

For alterations in the erection and completion of new billiard room at the Marquess Tavern, Canonbury, for Mr. Tullet. Mr. James Miller, architect. Quantities supplied:—

Bridgeman	£550	0	0
Taylor	499	0	0
Hansell	472	0	0
Colt	465	0	0
Hatton & Co.	456	0	0
Bishop	417	0	0
Hobern	395	0	0

For schools, German Church, Hooper-square, Leman-street, E. Messrs. T. & W. Stone, architects:—

Hunt	£1,120	0	0
Adcock	1,000	0	0
Wagner	950	0	0
Forest	944	0	0
Palmer	873	0	0
Johnson (accepted)	863	0	0

For St. Boniface (R. C.) School, Whitechapel. Mr. John Young, jun., architect:—

Brass	£1,873	0	0
Conder	1,815	0	0
Morter	1,743	0	0
Bangs	1,695	0	0
Ashby & Horner	1,550	0	0
Lawrance	1,519	0	0

For alterations of St. James's-road and bridge over Bricklayers' Arms Branch at Mercers' crossing, for the South-Eastern Railway;—

Hatton & Co.	£13,540	0	0

For six houses, Walthamstow. Mr. John Young, jun., architect:—

Hunt	£3,848	0	0
Ellis	3,455	0	0
Abraham	3,400	0	0
Outhwaite	3,320	0	0
Lawrance	3,150	0	0
Palmer	3,075	0	0

For new roads and sewers at Walthamstow. Mr. Bambridge, surveyor:—

Bloomfield	£1,300	0	0
Pizzey (accepted)*	1,135	0	0

* With another road added, extra, £575.

For new roads and sewers at Ealing:—

Nowell & Co.	£7,998	0	0
Killingback	7,800	0	0
Jackson	7,800	0	0
Pizzey (accepted)	7,599	0	0
Crockett (withdrawn)	6,731	0	0

For the erection of four pairs of semi-detached residences at West-road, Eastdown Park, Lewisham. Mr. Wm. C. Banks, architect. Quantities not supplied:—

Gorrum	£3,726	0	0
Eaton	3,480	0	0
Staines & Son	3,472	0	0
Sharpe & Everard	3,245	0	0

For works at the Imbecile Asylum, Darenth, Kent, for the Managers of the Metropolitan Asylum District. Messrs. A. & C. Harston, architects:—

Rain-water reservoir (150,000 gallons), sewage-screening tank, &c.:—

Braid & Co. (accepted)	£1,142	4	9

Drainage work as per schedule of prices:—
Braid & Co. (accepted).

For alterations to laundry at the Infirmary, Marloes-road, Kensington, for the Guardians. Messrs. A. & C. Harston, architects:—

Clements & Co.	£667	0	0
Fraser, Bros.	594	0	0
Benham (accepted)	430	0	0

For factory at Hatton-garden, for Messrs. H. & E. Watts. Quantities supplied by architect. Mr. G. A. Burn, architect:—

Browne & Robinson	£3,588	0	0
Thomas & Butland	3,528	0	0
Marks	3,488	0	0
Bamford	3,245	0	0
Heyworth	3,245	0	0
Pritchard	3,135	0	0
Cook	3,100	0	0
Scrivener & Co.	2,841	0	0

For new Convent and Chapel, De Bon-Secours, Cork. Mr. D. J. Conkley, architect:—

Delaney (accepted)	£8,000	0	0

For house at Highfields, Leicester, for Mr. S. Faire. Mr. E. Burgess, architect. Quantities by Mr. W. Thorncroft:—

Hutchinson & Son	£1,035	0	0
Major	1,031	8	6

For the erection of stable and entrance-porch to a house in Ellison-road, Streatham, for Mr. C. Howard. Mr. R. Cruwys, architect:—

Mundy	£198	0	0
Evans	195	0	0
Holland	151	5	0
Holcombe	140	0	0
Simons	135	0	0
Gatfield*	115	0	0

* Accepted, with modifications.

For alterations and reparations to Oulton Cottage, No. 1, Streatham-place, Brixton-hill, for Mr. E. Janes, sen. Mr. R. Cruwys, architect:—

Mason, Gillman, & Smart*	£150	0	0

* Accepted.

For additions to 217, Regent-street, for Messrs. B. W. Knight & Co. Mr. Edward Clark, architect:—

Mitchell & Gibbon	£615	0	0
Tarrant & Sons	595	0	0
Green	593	0	0
Oxford	565	0	0
Manley	564	0	0
Bywaters, Bros.	548	0	0

For the extension of the Hall-by-the-Sea, Margate, for Mr. George Sanger. Mr. Edward Clark, architect:—

Bushell	£4,200	0	0
Green	4,173	0	0
Paramor & Son	3,988	0	0
Holls	3,976	0	0
Denne	3,643	0	0
Adcock	3,586	0	0

For erecting two houses in Church-road, Cliftonville, Brighton, for Messrs. H. & L. Young. Mr. Benj. Nunn, architect. Quantities supplied:—

Lockyer	£5,440	0	0
Cheesman	5,250	0	0
Parsons	5,185	0	0
Chappell	4,980	0	0
Barnes	4,880	0	0
Dean	4,800	0	0
Ockenden	3,973	0	0
Nurcombe (accepted)	3,350	0	0

For the erection and completion of a residence and stabling at Esher, Surrey, for Mr. J. Frewen. Mr. Geo. Sherrin, architect. Quantities supplied by Mr. C. Blomfield:—

Dove, Bros.	£3,670	0	0
Oldridge	3,558	0	0
Sargeant	3,554	0	0
Rider & Son	3,508	0	0
Grover	3,188	0	0
Hall & Sons (accepted)	3,090	0	0

For building four houses and shops at Shern Hall-street, Walthamstow. Mr. Black, architect. Quantities by Messrs. Whitmore & Kennard:—

Boyd & Co.	£2,630	0	0
Huff	2,648	0	0
Sayer	2,560	0	0
Costen	2,472	0	0
Jones	2,464	0	0
Lane	2,420	0	0
Linfield	2,387	0	0
Nibblet	2,198	0	0
Burt	2,187	0	0

For making up roadways (roadwork only) of Herries-street, Lancefield-street, Mozart-street, Beethoven-street, and Dart-street, Kensal New Town, for the Vestry of Chelsea. Mr. G. H. Stayton, surveyor to the Vestry:—

Hayden, jun.	£3,990	0	0
Boyer	3,850	0	0
Brass	3,795	0	0
Nowell & Robson	3,760	0	0
Neave	3,630	0	0
George	3,475	0	0
Baxter	3,420	0	0
Stockwell (accepted)	3,245	0	0

For alterations, repairs, and decorative work at No. 26, West Smithfield, for Mr. Charles Bown. Mr. F. R. Hayes, architect:—

Wilson	£355	0	0
Adamson & Sons	349	0	0
Chamberlen, Bros.	348	0	0
Lidstone & Son (accepted)	329	13	0

For constructing sewer alongside the Great Eastern Railway to Edmonton, for the owners of the Bush-hill Park Estate, Enfield. Mr. T. Tayler Smith, architect. Quantities prepared by Mr. William H. Pipe:—

Docwra	£635	0	0

Duffield Cemetery.—In list of tenders in last week's *Builder* (p. 359), for "cemetery chapels and lodge, Dudley," (Mr. Ernest Long, architect), *read* "Duffield."

TO CORRESPONDENTS.

A. B.—D. & W.—J. H.—F. G.—M.—G. M.—M. G.—G. M. A.—W. H. P.—J. L. P.—H. C. B.—E. C.—G. S.—J. A.—T. H.—D. J. C. F. R. H.—E. H. S—J. F.—A. C. B.—R. & S.—W. W.—W. C. R.—C. D. & Co—O. & L.—H. H.—J. P.—R. C.—H. S. & Co.—T. F. & Son.—W. A.—W.—A. Z. (no).—H. E (not quite correct).

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

NOTICE TO ADVERTISERS.

GOOD FRIDAY.

"THE BUILDER," for the week ending APRIL 12th, will be published on THURSDAY MORNING, 10th instant. Advertisements for insertion in that Number must therefore reach the Office before **THREE p.m.** *on WEDNESDAY, the 9th.*

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Addressed to No. 46, Catherine-street, W.C.

Advertisements for the current week's issue must reach the office before THREE o'clock p.m. on THURSDAY.

The Publisher cannot be responsible for TESTIMONIALS left at the Office in reply to Advertisements, and strongly recommends that COPIES ONLY should be sent.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied *direct* from the Office to residents in any part of the United Kingdom at the rate of 19s. per annum, *prepaid*. Remittances payable as above.

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